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ABSTRACT

This directory provides information on research in chemistry at private undergraduate colleges. A department profile and a faculty profile are provided for 123 colleges. The department profile is designed to provide information on the available human resources, facilities, and financial support. The human resources section consists of data on the students, faculty, and staff. Numbers provided on the faculty and support staff are for the fall of 1980, and student data are for the 1980 graduate seniors and for the graduating seniors, 1976-77 through 1979-80. The faculty profile provides data on the education, publications, and research interests of each faculty member. Publication listings are provided for each faculty member for five recently published papers. Each individual also listed any research grants active as of the fall of 1980. (CS)

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RESEARCH IN CHEMISTRY AT PRIVATE UNDERGRADUATE COLLEGES

SECOND EDITION

COUNCIL ON
UNDERGRADUATE
RESEARCH

SE 034 670

RESEARCH IN CHEMISTRY AT PRIVATE UNDERGRADUATE COLLEGES

SECOND EDITION

A Directory of Work in Progress by the Faculty of 123 Chemistry Departments Along With Background Data on Each Department

BRIAN ANDREEN, Editor
January 1981

COUNCIL ON UNDERGRADUATE RESEARCH

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Minneapolis, MN 55435

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Baccalaureate Origins of Ph.D.'s in Chemistry

FOREWORD

The Council on Undergraduate Research (CUR) was founded in 1978 by a small group of chemists concerned about the vitality of research with undergraduates. Incorporation as a non-profit organization was achieved in 1980 with the purpose of promoting the advancement of undergraduate research. A governing body of councilors, currently fifteen in number, plan and implement the work of the Council.

Although the corporate purpose is broadly stated, the collection and dissemination of information on undergraduate research has been the initial focus. The first edition of "Research in Chemistry at Private Undergraduate Colleges" was published in 1978. The second edition is viewed as the first in a series of periodic updates. A thrice yearly newsletter featuring provocative and timely articles was started in 1980 and is nearing its first anniversary. In addition to these publications, the Council is planning conferences and workshops to share undergraduate research expertise and experiences. In all of these ventures, the intent is to address unmet needs rather than to duplicate existing activities.

CUR COUNCILORS

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Gene G. Wubbels, Grinnell College
Claude H. Yoder, Franklin and Marshall College

INTRODUCTION

"Research in Chemistry at Private Undergraduate Colleges" is a directory of research in progress by faculty at selected private undergraduate colleges along with background information on each department. Like the first edition, this volume continues the style of dividing the data into two sections; a department profile containing vital statistics on the students, faculty, facilities and available funds and a faculty profile with short vita, recent publications and grants listed for each faculty member. Following the department listings is a table of baccalaureate origins data for Ph.D.s in chemistry at private colleges.

One hundred twenty-three institutions (121 departments) provided entries for this edition. The major criterion for eligibility was demonstrable evidence of ongoing research. Acceptable evidence included research grants and research publications by faculty and students. A major change from the first edition was the inclusion of departments who have a doctorate on the books but are not actively involved in doctoral research. Eligibility criteria were set at less than five Ph.D.s awarded during the period 1976-80. Mount Holyoke College and Wake Forest University, the two departments that were admitted by this guideline change, have in fact, awarded no Ph.D.s during that period. No limitation has been placed on master's programs at this time, however there is a continuing concern among the CUR councilors that the emphasis of directory departments should be on undergraduate research and education.

This volume is direct printed from originals provided by each department so there is some variation in type and copy quality. Serious deviations from style or guidelines and obvious errors have been corrected as much as possible. Inevitably some injustices have been done and some errors have gone undetected and for these we beg your indulgence.

Without the help of many, this volume would not be possible. Busy chairmen or chairwomen and their colleagues took time from their schedule to compile the necessary data and put it in a usable form. The CUR councilors, especially Vic Heasley and Dave Powell of the Directory committee, have given generously of their advice and help. We are indebted to Claude Yoder and his colleagues at Franklin and Marshall College for the baccalaureate origins data. And finally, we wish to acknowledge both the direct and indirect support of Research Corporation to the completion of this project. Directly Research Corporation has encouraged the editor to devote a portion of his time to the production of the directory along with the good help of Mrs. Rosalie Nelson, regional office secretary. Indirectly, Kendall W. King, Vice President for Grants and R. Scott Pyron, Regional Director, have provided copious doses of encouragement and helpful advice on many occasions.

A beachhead for undergraduate research has been established with the founding of CUR and the resultant publications. The initial directory has proven to be a valuable source book on the state of undergraduate research. We hope this revised and expanded compilation will be useful not only now but also as part of a growing data base for a history of undergraduate research in chemistry. Any suggestions for improvement of the format or content are always welcome.

BRIAN ANDREEN
January 1981

EXPLANATORY NOTES

Unless otherwise indicated, the numbers are for the fall of 1980. Where five years are indicated, they refer to the years 1976-80 inclusive.

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

Full time equivalents (FTE) for faculty, academic year; for support personnel, calendar year. Support personnel exclude student help. National honors refers to unrestricted awards in an open national competition, i.e., NSF graduate fellowships, Rhodes scholars and Fullbright scholarships.

FACILITY, LIBRARY & EQUIPMENT BASE

Building space, chemistry only. Instrumentation - up to ten major instrument classes.

Common Abbreviations used for Instrumentation:

INSTRUMENT

AA - atomic absorption
AE, AES, ES - emission spectrometry
DSC - dynamic scanning calorimetry
DTA - differential thermal analysis
EM - electron microscope; prefix S-scanning, T-transmission
ESCA - X-ray photo electron spectroscopy
ESR-EPR - electron spin resonance
GC, VPC - gas chromatography
HPLC - high pressure liquid chromatography
LS - liquid scintillation
IR - infrared
MS - mass spectrometer
NMR - nuclear magnetic resonance
NQR - nuclear quadrupole resonance
ORD-CD - optical rotary dispersion - circular dichroism
TGA - thermal gravimetric analysis
UV - ultraviolet visible spectrometer

MANUFACTURER

B&L - Bausch & Lomb
HP - Hewlett-Packard
IEC - International Equipment Co.
ISCO - Instrument Specialties Co.
JA - Jarrell-Ash
LN - Leeds & Northrup
PAR - Princeton Applied Research Corp.
P-E - Perkin-Elmer Corp.
YSI - Yellow Springs Instrument

All library figures reflect the current department holdings. Standing orders include series such as Advances in Organometallic Chemistry, etc. Both department and campus computer facilities are included.

SUPPORT BASE 1979-80 ACADEMIC YEAR - 1980 SUMMER

Internal support includes project grants, equipment, supplies, travel expenses, stipends and publications. Departmental grants include general grants for support of research such as Du Pont, Dreyfus, Amoco, NSF-URP, etc. Faculty loads are average, weekly contact hours/faculty member.

FACULTY PROFILE

Each faculty member provided a short vita, listing name, yr. of birth, academic rank, education, area of chemistry and research interests. A list of up to five recent publications was also allowed and where the actual number exceeded five, a notation to this effect is made before the publication list. PUBLICATIONS WITH UNDERGRADUATE STUDENT CO-AUTHORS BEAR AN ASTERICK BY THE STUDENT'S NAME. Journal articles accepted for publication, review articles, printed conference proceedings and books were included. Book reviews, talks, abstracts were excluded. Active research grants, if any, follow the individual publication listing.

ABILENE CHRISTIAN UNIVERSITY
Abilene, Texas 79699

Fall 1980 ug enrollment 3,896
Degrees offered BA, BS, MS
Telephone (915) 677-1911

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 7.5. 2. Support staff FTE's: Sec'y 1 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 9 Grad. school 6 Industry 1 Professional schools 2 Other 0.
4. Senior majors, average past five years: 10.
5. Undergraduates involved in research, average past five years:
   Academic year 13 Summer 12
6. Master's program? Yes Master's degrees conferred, average past five years: 2
7. National honors, undergraduate or senior majors, past five years:
   1980 - Claudia Lewis Alfred Nolle Alpha Chi Scholarship

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 27,600
2. Instrumentation:

PHI ESCA System
NMR (P-E R12B)
GC (Varian 3700)
MS (Varian 600)
AA (EEL 140)
IRs (Beckman 4240, IR-10, Acculab IV)
UV-Visible (Beckman DBG and Coleman 124D)
X-ray Diffraction (Phillips Elec. 12045)
Magnet Susceptibility System (Model RM-2)
HPLC System (Waters Associates)

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 43 Computer literature search service? Yes Separate chemistry or science library? No Librarian? N/A Standing orders for review series and annual reviews (past five years) 51.

4. Computer facilities:
   Access to 8 gigabytes of on-line disk storage, a distributive network of two Cyber 174s, a DEC10, a PDP 11/34 with 13 terminals, an IBM 360/30, and numerous microcomputers

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   $25,250 for faculty research grants and faculty salary supplementation

2. Departmental grants:
   $7,089 (Private Donors)

3. Faculty teaching loads: Contact hours 12 Load credit for research? Yes

4. Sabbatical or leave support for research:
   Leave support for research is provided by grant funds from the University subject to the approval of the Research Council.

FACULTY PROFILE

BRADFORD, JOHN L. (b. 1929) Associate Professor. B.S., 1950, Abilene Christian University, M.S. 1951, North Texas State University. Analytical Chemistry. Coulometry, chronopotentiometry, potentiometry, trace analysis of metals by electrochemical methods.

*L. M. Daniels, J. L. Bradford, "An Inexpensive Electrode Storage and Conditioning Device," J. Chem. Educ., 53, 225 (1976).

J. L. Bradford, "Another Use for Broken Glass Electrodes," J. Chem. Educ., 55, 129 (1978).

J. L. Bradford, "A Substitute for Mercury Electrode Contacts," J. Chem. Educ., 57, 159 (1980).

DAVIS, ALVIE L. (b. 1931) Professor. B.S., 1955, Abilene Christian University, Ph.D., 1960, University of Texas, Austin. Bioorganic Chemistry. Nitrogen heterocycles, cyclic hydroxamic acids, amino acids, metabolic antagonists, relationship of chemical structure and biological activity.

Six Publications, 1976-80.

A. L. Davis, D. L. Tabb, *J. K. Swan, and T. J. McCord, "Synthesis of the 3-Methyl and 4-Methyl Derivatives of 3-Amino-3,4-dihydro-1-hydroxycarbostyril and Related Compounds," J. Heterocyclic Chem., (in press).

A. L. Davis, K. L. Hulme, G. T. Wilson, and T. J. McCord, "In Vitro Antimicrobial Activity of Some Cyclic Hydroxamic Acids and Related Lactams," Antimicrob. Agents. Chemother., 13, 542 (1978).

T. J. McCord, S. F. Kelley, J. A. Rabon, L. D. Gage, L. L. Maples, and A. L. Davis, "Rearrangement of Some Chlorosubstituted 3-Amino-3,4-dihydro-1-hydroxycarbostyrils in Hydrogen Halide Acids," J. Heterocyclic Chem., 13, 1091 (1976).

Grant Active 1980-82: Robert A. Welch Foundation, $41,000, Chemistry and Microbiological Properties of Nitrogen Heterocycles.

DUNN, FLOYD W. (b. 1920) Professor and Dean of the Graduate School. B.S., 1944, Abilene Christian University, M.S., 1946, Ph.D., 1950, University of Colorado, Boulder. Organic and Biochemistry. Peptides containing unnatural amino acids, peptide synthesis, amino acid synthesis.

HANCE, ROBERT L. (b. 1943) Professor. A.A., 1963, York College, B.S., 1966, Abilene Christian University, Ph.D., 1970, M.I.T. Physical Chemistry. Molecular beam surface interactions of small molecules on transition metals, electron spectroscopy, and programmed thermal desorption.

Nine publications, 1976-80.

J. W. Rogers, Jr., C. T. Campbell, R. L. Hance, and J. M. White, "An Electron Spectroscopy Study of Ammonia Adsorption on Clean and Oxidized Aluminum" Surface Science, 97, 425-447 (1980).

S.-K. Shi, J. M. White, and R. L. Hance, "Properties of Oxygen Adsorption on Platinum at 160 K," J. Phys. Chem., 84, 2441-2446 (1980).

C. T. Campbell, J. W. Rogers, Jr., R. L. Hance, and J. M. White, "Auger Spectra of Ammonia on Aluminum and Oxidized Aluminum," Chem. Phys. Lttrs., 69, 430-434 (1980).

*B. Bernard, *L. Daniels, R. L. Hance, B. Hutchinson, "Facile Synthesis of $^{57}Fe(CO)_5$," Synth. React. Inorg. Met.-Org. Chem., 10, 1-7 (1980).

HANCE, ROBERT L. (cont'd)

Grants Active 1979-82: Robert A. Welch Foundation, $59,000, Molecular Beam and Surface Interactions of Atoms and Molecules; 1979-81: National Science Foundation, $25,000, Adsorption and Coadsorption of Small Molecules on Rhenium; 1979-81: Research Corporation-King Foundation, $40,000, Temperature Programmed Reaction Spectroscopy, Transient Gas Kinetic Experiments and Electron Spectroscopy Studies of Polycrystalline Rhenium and Tungsten Surfaces.

HUTCHINSON, BENNETT B. (b. 1942) Professor. B.S., 1963, Abilene Christian University, M.A., 1965, University of Texas, Austin, Ph.D., 1970, Illinois Institute of Technology. Inorganic Chemistry. Vibrational spectroscopy of inorganic and organometallic complexes containing transition metals.

Twelve publications, 1976-80.

B. Hutchinson, R. Hance, *E. Hardegree, and *S. Russell, "A Simple Demonstration of the Curie-Weiss Law and a Spin-Crossover Compound," J. Chem. Educ., 57, (1980).

B. Hutchinson, J. D. Oliver, D. F. Mullica, and W. O. Milligan, "Iron-Nitrogen Bond Lengths in Low-Spin and High-Spin Iron(II) Complexes with Polypyrazolyl Ligands," Inorg. Chem., 19, 165 (1980).

P. J. Krusic, J. San Filippo, Jr., B. Hutchinson, R. L. Hance, and *L. M. Daniels, "Odd-Electron Iron Carbonyl Complexes," J. Amer. Chem. Soc., 1980 (in press).

B. Hutchinson, *E. Henderson, *P. Neill, G. Long, and L. Becker, "Characterization of a High Temperature Spin Equilibrium Compound, Bis[hydrotris(Pyrazol-1-yl)-borate]iron(II)," Chem. Commun., 1003 (1979).

B. Hutchinson, *J. Morgan, C. B. Cooper III, T. Mathey, and D. F. Shriver, "Metal Isotope Shifts in the Raman Spectrum of $Mo_2(O_2CCH_3)_4$," Inorg. Chem., 18, 2048 (1979).

Grant Active 1979-82: Robert A. Welch Foundation, $66,000, Application of Metal-Isotope Substitution in Vibrational Spectroscopy.

LEWIS, DONALD E. (b. 1931) Professor. B.S., 1952, Abilene Christian University, M.S., 1954, Florida State University, Ph.D., 1957, Florida State University. Biochemistry. Chemical education, development of curriculum materials for first-year chemistry lecture and laboratory courses.

B. Hutchinson, R. L. Hance, and D. Lewis, "A Freshman Student Opinion Assignment: Attitudes Toward Scientists," J. Chem. Educ., 56, 110 (1979).

McCORD, TOMMY J., (b. 1932) Professor and Head. B.S., 1954, Abilene Christian University, M.A., 1958, University of Texas, Austin, Ph.D., 1959, University of Texas, Austin. Organic Chemistry. Synthesis and resolution of amino acids, and studies of their microbiological activities; chemistry of heterocyclic compounds.

Six publications, 1976-80.

T. J. McCord, D. R. Smith, *J. K. Swan, *A. M. Goebel, D. E. Thornton, C. C. Yakshe, and A. L. Davis, "Synthetic and Structural Studies of Some Chloro-substituted Methyl 2,1-Benzisoxazole-3-carboxylates and Related Compounds," J. Heterocyclic Chem., 16, 1249 (1979).

T. J. McCord, D. E. Thornton, K. L. Hulme, and A. L. Davis, "Synthesis and Microbiological Properties of 2-Iodotyrosine and Related Compounds," Tex. J. Sci., Volume XXX, No. 4 (1978).

T. J. McCord, R. N. Watson, *C. E. DuBose, K. L. Hulme, and A. L. Davis "The Synthesis and Microbiological Activities of β-(1-Chloro-2-naphthyl)alanine and β-(1-Bromo-2-naphthyl)alanine," J. Med. Chem., 19, 429 (1976).

McCORD, TOMMY J. (cont'd)
Grant active 1980-82: Robert A. Welch Foundation, $41,000, Synthesis and Biological Activities of Some Amino Acid Analogs.

REEVES, PERRY C. (b. 1942) Professor. B.S., 1965, Abilene Christian University, Ph.D., 1969, University of Texas, Austin. *Organic and Organometallic Chemistry*. Carbocations stabilized by organometallic systems, and study of various catalysts bound to insoluble polymeric supports.

Nine publications, 1976-80.

M. Shea-Chiles, *D. D. Jackson, and P. C. Reeves, "Preparation and Synthetic Utility of Phase Tansfer Catalysts Anchored to Polystyrene," *J. Org. Chem.*, *45*, 2915 (1980).

R. S. Bayound, E. R. Biehl, and P. C. Reeves, "Reactions of Pentadienyliron Tricarbonyl Cations with Hydride Donors," *J. Organometal. Chem.*, 174, 297 (1979).

B. Y. Shu, E. R. Biehl, and P. C. Reeves, "General Synthetic Route to Monosubstituted Cycloheptadienes from Organometallic Compounds," *Synthetic Commun.*, *8*, 523 (1978).

P. L. Pruitt, E. R. Biehl, and P. C. Reeves, "Substituent Effects in the Cyclobutadieneiron Tricarbonyl System," *J. Chem. Soc. Perkin II*, 907 (1977).

C. S. Eschbach, D. Seyferth, and P. C. Reeves, "A C-13 NMR Study of Cyclobutadieneiron Tricarbonyl Stabilized Carbonium Ions," *J. Organometal. Chem.*, *104*, 363 (1976).

Grant Active 1980-82: Robert A. Welch Foundation, $33,000, Carbonium Ions Stabilized by Organometallic Systems.

AGNES SCOTT COLLEGE
Decatur, GA 30030

Fall 1980 ug enrollment 541
Degrees offered B.A.
Telephone (404) 373-2571, Ext. 229
Ext. 228

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 4. 2. Support staff, FTE's: Sec'y 1/5 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 2 Grad. school 1 Industry 1
Professional schools ______ Other ______.
4. Senior majors, average past five years: 2.6.
5. Undergraduates involved in research, average past five years:
Academic year 1 Summer 1.4
6. Master's program? No Master's degrees conferred, average past five years. N/A
7. National honors, undergraduate or senior majors, past five years:
None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 15,326
2. Instrumentation:
Spectrophotometer (Pye-Unicam SP1800, Beckman 25 and Beckman DU)
Spectrophotofluorometer (Aminco-Bowman)
NMR (P-E R24A)
IR (Pye-Unicam SP1100 and P-E137B)
Potentiostats (Wenking 61RH & custom made for RRDE)
AA (Varian 1000) Thru
HPLC (Waters ALC/GPC-201)
GC (FID Varian 274010-00, TC H/P F&M, 2 Carle)
MASS SPEC (Varian EM600)
3. Library resources: CA? 1977 Volume indices? Yes Collected indices? Some Total journal subscriptions? 24 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 12.

4. Computer facilities: Department: 2 PDP/8s minicomputers, 2 ASR-33TTY, 1 HSR, 1 Tennecomp Mag Cartridge Unit, 1 AX08 Data Acquisition Unit (Scope Display); Campus: Terminals to Emory University Univac 90/80.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: $1500-2000 for new faculty; some expendables, others. Travel: 1 meeting per year per faculty member

2. Departmental grants:
Dreyfus $15,221

3. Faculty teaching loads: Contact hours 12 Load credit for research? No.

4. Sabbatical or leave support for research: Two Quarters or Full Year at 50% salary; one Quarter at Full salary. Eligible for one sabbatical leave an average of every six years of full-time teaching with at least four years separating any two sabbatical leaves. Exceptions considered on individual basis.

FACULTY PROFILE

CONNELL, SUSAN S. (b. 1946) Instructor. B. A. 1968, Agnes Scott College. General and Introductory Analytical Laboratory.

CUNNINGHAM, ALICE J. (b. 1937) William Rand Kenan, Jr. Professor and Chairman. B. A. 1959, University of Arkansas; Ph.D. 1966, Emory University. Analytical and Physical Chemistry. Electroanalytical methods and biochemical analysis.

Alice J. Cunningham and Harry P. Hopkins, Jr., "Physical Chemistry for the Life Sciences, Results of a Survey by the ACS Subcommittee on Physical Chemistry Examinations", J. Chem. Educ., 56,325 (1979).

A. J. White and Alice J. Cunningham, "Synthesis and Electrochemistry of Cyclopentadienylcarbonyliron Tetramer: An Advanced Experiment", J. Chem. Educ., 57, 317 (1980).

GARY, JULIA T. (b. 1929) Professor and Dean of the College. B. A. 1951, Randolph-Macon Woman's College; M.A. 1953, Mount Holyoke College; Ph.D. 1958, Emory University. General and Analytical Chemistry.

KUZNESOF, PAUL M. (b. 1941) Associate Professor, Sc.B. 1963, Brown University, Ph.D. 1967, Northwestern University. Inorganic, Physical, and General Chemistry. Synthesis and characterization of electroactive polymers, Lewis acid-base adducts main group hydride chemistry.

R. E. Bruns, A.B.M.S. Bassi, and P. M. Kuznesof, "A Localized Molecular Orbital Interpretation of the Dipole Moment Derivatives of Ammonia. A Re-examination of the Bond Moment Model Description of Infrared Intensities," J. Amer. Chem. Soc., 98, 3432 (1976).

P. M. Kuznesof and R. L. Kuczkowski, "Microwave Investigation of the Structure of Trimethylaminetrimethylborane, $(CH_3)_3NB(CH_3)_3$," Inorg. Chem., 17, 2308 (1978).

P. M. Kuznesof, K. J. Wynne, R. S. Nohr, and M. E. Kenney, "Highly Conducting Iodinated Fluoroaluminum and Fluorogallium Phthalocyanine Polymers," J. C. S. Chem. Comm., 121 (1980).

P. M. Kuznesof, K. J. Wynne, P. G. Siebenmann, R. S. Nohr, and M. E. Kenney, "Highly Conducting Linear Stacked Polymers: Iodine-doped Fluoroaluminum and Fluorogallium Phthalocyanines," accepted for publication, J. Amer. Chem. Soc.

P. M. Kuznesof, R. S. Nohr, K. J. Wynne, and M. E. Kenney, "Conducting Polymers: Partially Oxidized Bridge-Stacked Metallophthalocyanines,"accepted for publication, J. Macromolec. Sci., Chem., and in "Advances in Organometallic Polymer Science."

SWANSON, RICHARD A. (b. 1948) Assistant Professor, B.S. 1970, St. Benedict's College; Ph.D. 1976, University of Kansas. Organic and Biochemistry. Organic synthesis, protein structure and function.

Richard A. Swanson and Karl M. Dus, "Specific Covalent Labeling of Cytochrome $P\text{-}450_{CAM}$ with 1-(4-Azidophenyl)imidazole, and Inhibitor-Derived Photoaffinity Probe for P-450 Hemeproteins", J. Biol. Chem., 254, 7238 (1979).

K. Dus, D. Carey, R. Goewert and R. A. Swanson, "Microsomal Hemeproteins $P\text{-}450_{LM\text{-}2}$ and $P\text{-}450_{LM\text{-}4}$: Comparative Structural Studies", in Microsomes and Drug Oxidations Ed. V. Ullrich, Pergamon Press, Oxford and New York, 1977.

R. A. Swanson, J. Bumpus and K. Dus, "Resolution of Hemepeptides of P-450 Hemeproteins by HPLC" Liquid Chromatography Symposium I: Biological/Biomedical Applications of LC, Boston, 1977, Marcel Dekker, New York, 1977.

AUGUSTANA COLLEGE
Rock Island, IL 61201

Fall 1980 ug enrollment 2275
Degrees offered B.A.
Telephone 309-794-7000

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 6 . 2. Support staff, FTE's: Sec'y 3/4 Stockrm 3/4 Technical no
3. 1980 seniors & their placement: Total 13 Grad. school 2 Industry 5 Professional schools 4 Other 2 .
4. Senior majors, average past five years: 13 .
5. Undergraduates involved in research, average past five years:
   Academic year 3 Summer 1
6. Master's program? no Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   none

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 14,300
2. Instrumentation:
   NMR-Varian EM 360, EM 300
   IR-PE 467
   UV-Vis Varian 635
   GC Varian 2760
   AMICO Fluorospectrometer
   HPLC-ATEX Model 110
   Centrifuge-IEC B2CA
   Gel Electrophoresis-ISCO 1270
   Sargent Micro Combustion Apparatus
   C&H Analysis

3. Library resources: CA? yes Volume indices? yes Collected indices? some Total journal subscriptions? 25 Computer literature search service? yes Separate chemistry or science library? yes Librarian? no Standing orders for review series and annual reviews (past five years) 4 .

4. Computer facilities:
   PDP 11/70 time sharing system with two terminals in department.
   Remote link to Iowa City Regional Computing Center

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   $1300 (college) plus projects under auspices of Augustana Research Foundation, $5000
2. Departmental grants:
   Shell Companies Foundation, $3000

3. Faculty teaching loads: Contact hours 14 Load credit for research? none

4. Sabbatical or leave support for research:
   Full salary for one quarter, 3/4 salary for two quarters or 1/2 salary for full academic year, eligible every seventh year

FACULTY PROFILE

BERNTSEN, ROBERT A., (b. 1917) Professor. B.A., 1939, St. Olaf College, M.S., 1941, New York University, Ph.D., 1949, Purdue University. Organic Chemistry.

DE WIT, DAVID G. (b. 1944) Associate Professor. B.S., 1966, Calvin College, Ph.D., 1970, Northwestern University. Inorganic, Physical, General Chemistry. Kinetics and mechanisms of transition metal complexes, particularly metal carbonyls.

D. G. DeWit, J. P. Fawcett, and A. Poe, Reaction Mechanisms of Metal-Metal Bonded Carbonyls. Part XI. Reactions of Nonacarbonyl (triphenylphosphine) dirhenium and Octacarbonylbis (triphenylphosphine) dirhenium, J. Chem. Soc., Dalton, 528-33 (1976).

Grant active: Research Corporation 1977-present, $4,400.

ELIASON, MORTON A. (b. 1932) Professor and Chairman. B.A., 1954, Concordia College, Ph.D., 1959, University of Wisconsin. Physical and Theoretical Chemistry. Oscillating chemical reactions, simulation and modeling, computer application to chemistry and education.

Anna M. Wartman, *Caroline Hagberg, and Morton A. Eliason, Refractive Index-Dry Substance Relationships for Commercial Corn Syrups, J. Chem. & Eng. Data, 21(4)459 (1976).

Frank A. Kurtz and Morton A. Eliason, Corn Syrup Composition-Refractive Index-Dry Substance Relation: Development of a General Equation, J. Chem. & Eng. Data, 24 44 (1979).

Anna M. Wartman, *Alan J. Bridges, and Morton A. Eliason, Refractive Index-Dry Substance Relationships for Commercial High Fructose Corn Syrups and Blends. J. Chem. & Eng. Data, 25, 277-282 (1980).

NARSKE, RICHARD M. (b. 1942) Associate Professor. B.A., 1964, Augustana College, M.S., 1966, University of Iowa, Ph.D., 1968, University of Iowa. Analytical-Organic Chemistry. Anaerobic production of methane, new analytical methods for trace impurities in medical devices, organometallic complexes with polyhaloimides.

R. M. Narske, System and Process for Anaerobic Digestion, patent approved November 1980.

R. M. Narske, Stacked Module for Anaerobic Digestion, patent approved November 1980.

PETERSON, MELBERT E. (b. 1930) Professor. A.B., 1953, Augustana College, M.S., 1955, University of Illinois, Ph.D., 1967, Oklahoma State University, 1973, Associate Director, Augustana Research Foundation. Organic Chemistry. Grignard reaction, organophosphorus chemistry, elimination reactions.

WARTMAN, ANNA M. (b. 1938) Associate Professor. B.S., 1960, University of Detroit, Ph.D., 1966, Wayne State University. Biochemistry. Chemical carcinogenesis.

Anna M. Wartman, *Caroline Hagberg, and Morton A. Eliason, Refractive Index-Dry Substance Relationships for Commercial Corn Syrups, J. Chem. & Eng. Data, 21(4)459 (1976).

Anna M. Wartman, *Alan J. Bridges, and Morton A. Eliason, Refractive Index-Dry Substance Relationships for Commercial High Fructose Corn Syrups and Blends. J. Chem. & Eng. Data, 25, 277-282 (1980).

AUGUSTANA COLLEGE

Sioux Falls, SD 57197

Fall 1980 ug enrollment 1914

Degrees offered BA

Telephone (605) 336-4810

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5 . 2. Support staff, FTE's: Sec'y 0 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 11 Grad. school 3 Industry 1 Professional schools 4 Other 3 .
4. Senior majors, average past five years: 11 .
5. Undergraduates involved in research, average past five years:
   Academic year 2 Summer 1
6. Master's program? no Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   N/A

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 13,000
2. Instrumentation:
   NMR (P-E R24A)
   GC/MS (Finnegan 3000)
   GC (Aerograph Hy-Fi 600D, Matronic 500, Carle Basic)
   IR's (Beckman IR7, IR8, Microspec)
   UV-visible (Beckman DU, DB)
   Conductance bridge (LN 4666)
   Potentiometer (LN K-3)
   Beckman Electroscan 30
3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 17 Computer literature search service? yes Separate chemistry or science library? yes Librarian? no Standing orders for review series and annual reviews (past five years) 12 .
4. Computer facilities: Department; Tektronix 4010-1 graphics terminal, LSI ADM-3A CRT terminal, Commodore PET 2001-16N microcomputer for interfacing. Campus; IBM 1130, DEC PDP 11/40 timesharing system, DEC PDP 11/70 on order.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   About $1000 for chemicals and supplies.
2. Departmental grants:
   Chemistry participated in NSF CAUSE grant (involving about 8 departments locally) and in Physics LOCI project concerning microcomputer interfacing.
3. Faculty teaching loads: Contact hours 14 Load credit for research? no .
4. Sabbatical or leave support for research:
   Half salary for full academic year after three years of teaching, full salary for one semester after six years of teaching, Interim (January) leave at full salary every third Interim.

FACULTY PROFILE

HANSON, MILTON P. (b. 1938) Professor. B.A., 1960, Augustana College (SD), Ph.D., 1964, Rice University. *Organic Chemistry*. Polymer crosslinking agents, carbonium ion precursors.

M.P. Hanson and C.S. Marvel, "A Synthesis of Dimethyl 2,7-Biphenylene Dicarboxylate and its Use as a Cross Linking Agent in a Polymer", *J. Pol. Sci., Polymer Letters Ed.*, *15*, 653 (1978).

KINTNER, R. ROY (b. 1928) Professor and Chairman (on leave 1980-81). B.S., Iowa State University, 1953, Ph.D., University of Washington, 1957. *Organic Chemistry*. Organic reaction mechanisms, environmental problems.

W. Dorband and R.R. Kintner, "Moisture Content Estimation for Landfill Refuse from Sioux Falls, S.D.", *Proc. N.D. Acad. Sci.*, *33*, 30 (1979).

LINDBECK, MARTHA J. (b. 1953) Assistant Professor. B.A., Augustana College (SD), 1975, University of California, San Diego (Scripps), 1975-1976, Ph.D. candidate at Montana State University. *Inorganic Chemistry*.

VISTE, ARLEN E. (b. 1936) Professor and Acting Chairman (1980-81). B.A., St. Olaf College, 1958, Ph.D., University of Chicago, 1962. *Inorganic Chemistry*. Inorganic reaction mechanisms, electronic structure of inorganic compounds.

A. Viste and D.E. Irish, "Raman and Infrared Spectral Studies of Polycrystalline Tallium(I) Halates, $TlXO_3$", *Can. J. Chem.*, *55*, 3218 (1977).

WAY, KERMIT (b. 1939) Assistant Professor. B.A., Luther College, 1961, M.S., Michigan State University, 1965, Ph.D., University of Iowa, 1976. *Physical Chemistry*. Laser induced reactions, theory of atomic interactions, reactions of small molecules.

Six publications, 1976-1980.

C.Y.R. Wu, J.B. Crooks, S.C. Yang, K.R. Way, and W.C. Stwalley, "A Li/Li_2 Supersonic Nozzle Beam", *Rev. Sci. Instrum.*, *49*, 380 (1978).

W.T. Zemke, K.R. Way, and W.C. Stwalley, "Radiative Transition Probabilities for the $B\ {}^1\Pi - X\ {}^1\Sigma^+$ and $B\ {}^1\Pi - A\ {}^1\Sigma^+$ Bands of LiH", *J. Chem. Phys.*, *69*, 402 (1978).

W.D. Phillips, J.A. Serri, D.J. Ely, D.E. Pritchard, K.R. Way, and J.L. Kinsey, "Angular Scattering Distribution by Doppler Spectroscopy: Na $(3P_{1/2}) + Ar \rightarrow Na$ (3P3/2) + Ar", *Phys. Rev. Lett.*, *41*, 937 (1978).

J.B. Crooks, K.R. Way, S.C. Yang, C.Y.R. Wu, and W.C. Stwalley, "Photon and Positive Ion Production from Collisions of Superthermal Hydrogen Atoms with Lithium Ions and Molecules", *J. Chem. Phys.*, *69*, 490 (1978).

W.C. Stwalley, W.T. Zemke, K.R. Way, K.C. Li and T.R. Proctor, "The Potential Energy Curves of the $X^1\Sigma^+$ and $A^1\Sigma^+$ States of Lithium Hydride", *J. Chem. Phys.*, *66*, 5412 (1977).

ZALETA, MARY A. (b. 1951) Assistant Professor. A.B., 1973, Hope College, Ph.D. Candidate at Iowa State University. *Organic Chemistry*.

AUSTIN COLLEGE
Sherman, TX 75090

Fall 1980 ug enrollment 1140
Degrees offered B.A.
Telephone 214/892-9101

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5 . 2. Support staff, FTE's: Sec'y ½ Stockrm ⅓ Technical ⅓
3. 1980 seniors & their placement: Total 2 Grad. school 0 Industry 0
   Professional schools 2 Other 0 .
4. Senior majors, average past five years: 9 .
5. Undergraduates involved in research, average past five years:
   Academic year 5 Summer 5
6. Master's program? No Master's degrees conferred, average past five years: N.A.
7. National honors, undergraduate or senior majors, past five years:

   none

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 20,000
2. Instrumentation:
   NMR-Varian EM360
   MS-Hitachi RMU-6D
   UV-Vis - Coleman EPS-3T, Beckman DB
   Mossbauer-Austin Assoc.
   (2) IR-Beckman Ir-V
   X-Ray Diffraction Unit
   (2) GC-Varian Aerograph
   DTA-Premco
   TGA-Cahn
   Magnetic suseptibility
3. Library resources: CA? yes Volume indices? no Collected indices? yes Total journal subscriptions? 18 Computer literature search service? yes Separate chemistry or science library? yes Librarian? no Standing orders for review series and annual reviews (past five years) 15 .

4. Computer facilities:
   PDP 1144 computer
   Interdata 732 computer
   (3) Apple Minicomputers

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   Approx. $34,000/yr. chemical, glassware, equipment, scholarships.

2. Departmental grants:

   none

3. Faculty teaching loads: Contact hours 12 Load credit for research? 3 hours

4. Sabbatical or leave support for research:

   Faculty are eligible for sabbatical after 6 years with 50% salary for a full year or 100% salary for ½ year.

FACULTY PROFILE

BARR, CHARLES R. (b. 1932) Professor. B.A., 1954, North Central College. M.S., 1957, Ph.D., 1960, Michigan State University. Biochemistry. Reactive sites in enzymes.

BARNES, JAMES A. (b. 1944) Associate Professor. B.S., 1966, Davidson College. Ph.D., 1970, University of North Carolina. Inorganic and Analytical Chemistry. Synthesis and characterization of transition metal complexes, especially compounds with possible anti-tumor properties. Energy production and conservation.

A. L. Rocklin and J. A. Barnes, "Viscosity Phenomena II: Predicting Viscosities of Aqueous Blends Containing A Maximum of 50%W of One Or More Organic Solvents," J. Coatings Technology, 52, No. 665, 23 (1980).

GIBSON, HARRY H., JR. (b. 1939) Professor. B.A., 1961, Emory University. Ph.D., 1967, Florida State University. Organic Chemistry. Chemistry of nitrenes; phase-transfer catalysis.

H. H. Gibson, Jr., *H. R. Gaddy, III, and *C. S. Blankenship, "Reaction of Organic Azides with Ethoxycarbonylnitrene," J. Org. Chem., 42, 2443 (1977).

Grant Active 1980-82: The Robert A. Welch Foundation Grant, $30,000. The Interaction of Organic Azide and Reactive Intermediates.

IMHOFF, MICHAEL A. (b. 1942) Professor and Chairman. B.A., 1964, University of California at Riverside. Ph.D., 1969, University of Colorado. Organic Chemistry. Free radical displacements on carbon and neighboring group participation in solvolytic reactions.

L. R. Subramanian, M. Hanack, L. W. K. Chang, M. A. Imhoff, P.v.R. Schleyer, F. Effenbeauer, W. Kurtz, P. Stang, and T. Dueber, "On Attempts at Solvolytic Generation of Aryl Cations," J. Org. Chem., 41, 4099 (1976).

Grant Active, 1978-80: The Robert A. Welch Foundation Grant, $28,000. Free Radical Displacement on Carbon.

THOMPSON, DORIS M. (b. 1937) Assistant Professor. B.S., 1958, Louisiana State University. M.S., 1964, University of North Carolina. Ph.D., 1972, University of Kentucky. Physical Chemistry.

D. M. Thompson, M. F. Richardson, S. M. Rothstein. "Significance Testing of a Decrease in the R-Factor. The Jacknife and Hamilton's R-Factor Ratio Test Applied to the Case of a False Minimum in Crystallography." Acta Cryst., A36, 000-000 (1980).

D. M. Thompson, M. F. Richardson, S. M. Rothstein. "JKNIFE. A Nonparametric Statistical Test of Variance," a computer program deposited with QCPE, the Quantum Chemistry Program Exchange, Indiana University, Bloomington, Indiana, 1980.

D. M. Thompson, *W. Balenovich, *L. H. M. Hornich, and M. F. Richardson, "Reactions of Metal Ions with Vitamins. IV. The Crystal Structure of a Zinc Complex of Pyridoxamine (Vitamin B_6)." Inorg. Chem. Acta 46, 199-203 (1980).

D. M. Thompson, I. D. Brindle, and M. F. Richardson, "The Crystal and Molecular Structure of a Compound Containing a Novel Rings System: (E)-6-(bromomethylene)-5,6-dihydro-4,4-dimethyl-2-phenyl-4H-1,3,4-oxadiazinium Bromide," Can. J. Chem., 57, 3157-3159 (1979).

D. M. Thompson and M. F. Richardson, "The Crystal and Molecular Structure of Thiamine Bromide Hydrobromide Hemihydrate," Acta Cryst., B33, 324-328 (1977).

BARNARD COLLEGE

New York, NY 10027

Fall 1980 ug enrollment 2499

Degrees offered B.A.

Telephone (212) 280-3377 or
280-2074

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5 . 2. Support staff, FTE's: Sec'y 1½ Stockrm 0 Lab. Instr. 3
3. 1980 seniors & their placement: Total 17 Grad. school 5 Industry 3
Professional schools 7 Other 2 .
4. Senior majors, average past five years: 19 .
5. Undergraduates involved in research, average past five years:
Academic year 3 Summer 8
6. Master's program? No Master's degrees conferred, average past five years: NONE
7. National honors, undergraduate or senior majors, past five years:
NSF Predoctoral Fellow, 1979-80. Sarah Werner.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 18,200
2. Instrumentation:
NMR (Varian T-60)
IR (Perkin-Elmer 467 & 735B)
(two P-E 710A)
UV-Vis (Beckman DB-G)
(Perkin-Elmer 200)
(Gilford modified DU)
Phillips X-ray Generator, Supper Powder Camera
GC (Varian 1200 w/Linear Inst. Integ. Recorder; Aerograph A-90-P; Gow-Mac 69-150)
Polarograph (Heath, recording)
Conductivity Bridge (Indus. Instr. RC-18)
3. Library resources*: CA? No Volume indices? No Collected indices? No Total journal subscriptions? 14 Computer literature search service? No Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 9 .
*We have full use of the Columbia University Library.
4. Computer facilities:
Two CRT terminals to DEC 20
Campus IBM 360/91 combined with 360/75

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Individual faculty members apply to an all college, faculty administered Research and Travel Fund for their needs. Usually granted up to $1000 each. All requests granted '79-'80.
2. Departmental grants:
Bristol-Myers $5000 in 1979 and in 1980
Merck Foundation $4250 in 1979 and in 1980
3. Faculty teaching loads: Contact hours 9-10 Load credit for research? No .
4. Sabbatical or leave support for research: Faculty can apply for sabbatical leave at 50% salary for a full year, or full salary for ½ year. Normally given automatically every 7th year. Special leaves are also possible.

FACULTY PROFILE

CHAPMAN, SALLY (b.1946) Ass't. Professor, A.B. 1968, Smith College, PhD. 1973, Yale University. Physical Chemistry. Theoretical Kinetics; moleculer collision processes. Seven publications, 1976-80.

S. Chapman "A Theoretical Study of the Effects of Vibration on the reaction $O_3 + NO \rightarrow O_2 + NO_2$". J. Chem. Phys., (in press)

S. Chapman, H. Schor , S. Green and R.N. Zare, "Dynamics of the Collinear $Be + FH \rightarrow BeF + H$ Reaction," J. Phys. Chem., 83, 905 (1979).

S. Chapman, H. Schor, S. Green and R.N. Zare, "Theoretical Study of Collinear $Be + FH(V_1) \rightarrow BeF(V_2) + H$," J. Chem. Phys., 69, 3790 (1978).

F. Schnabel* and S. Chapman, "Reactive Bands and Rebounding Trajectories in Collinear $F + H_2$" Chem. Phys. Lett., 57, 189 (1978).

S. Green and S. Chapman, "Collisional Excitation of Interstellar Molecules: Linear Molecules CO, CS, OCS and HC_3N" Astrophysical Journal Supplement Series, 37, 169 (1978).

Grant, Alfred P. Sloan Research Fellow, 1978-80, $19,800

JACOBSON, BARRY M. (b. 1945) Ass't. Professor, B.S. 1965, University of Chicago; PhD. 1971, Harvard University. Organic Chemistry. Mechanisms of ene and retroene reactions and of cycloadditions.

B.M. Jacobson, D. Gerhard*, C. Jackson*, and J. Smallwood*, "Mechanisms of the Decomposition of the Ene Adducts of some 1,3-cyclohexadienes to Benzene or Tetralin and Dihydroenophile", J. Org. Chem., 45, 3344 (1980).

B.M. Jacobson, "Aromatization of 1,4-cyclohexadiene with Tetracyanoethylene: An Ene Reaction," J. Am. Chem. Soc., 102, 886 (1980).

N.J. Turro, K-C. Liu and B.M. Jacobson, "Photoelimination of Nitrogen from Reluctant Cyclic Azo Compounds. Preparation of some Novel Cyclopentadiene Cyclodimers," Tetrahedron Letters, 555 (1978).

B.M. Jacobson, A.C. Feldstein* and J.I. Smallwood*, "Ene Reactions of Conjugated Dienes. Rate Enhancements in Cyclic 1,3-Dienes and Dependence of Ene Adduct: Diels Alder Adduct Ratio on Enophile Structure," J. Org. Chem., 42, 2849 (1977).

Grant: Cottrell College Science Grant, 1979-81, $10,200. Ene Reactions of Cyclohexadienes and Related Compounds.

KING, GRACE W. (b. 1923) Lecturer, B.A. 1945, University of Maine; PhD. 1950, Yale University. Physical Organic Chemistry. Ionization constants of amino acids.

LESSINGER, LESLIE (b.1943) Ass't. Professor, B.A. 1964, Harvard College; M.A. 1965, Harvard University; Ph.D. 1971, Harvard University. Physical Chemistry. X-ray Crystallography; application of direct methods to the solution of structures natural products and other compounds of biological interest; structural chemistry of organic polyvalent iodine compounds. Fourteen publications, 1976-80.

A.W. Dunn, R.A.W. Johnstone, T.J. King, L. Lessinger and B. Sklarz, "Fungal Metabolites, Part 7. Structures of C_{25} Compounds from Aspergillus Variecolor," J. Chem. Soc. (Perkin) 2113 (1979).

S. Swaminathan and L. Lessinger, "Bis(norbornadiene) Dicobalt Tetracarbonyl, $(C_7H_8)_2\ Co_2(CO)_4$," Cryst. Struct. Commun., 7, 621 (1978).

L. Lessinger and T.N. Margulis, "The Crystal Structure of Colchicine. A new application of Magic Integers to Multiple-Solution Direct Methods," Acta Cryst., B34, 578 (1978).

"MULTAN 76, A System of Computer Programmes for the Automatic Solution of Crystal Structures from X-ray Diffraction Data" by P. Main, L. Lessinger and M.M. Woolfson, University of York, England, and G. Germain and J.-P. Declereq, University of Louvain, Belgium (1976).

L. Lessinger, "On the Application of Phase Relationships to Complex Structures. IX. Multan Failures," Acta Cryst., A32, 538 (1976).

Grant: Cottrell College Science Grant, 1979-81 $14,200. Investigation of the Relation Between Structure and Biological Activity of Mammalian Thyrotropin - Releasing Hormone (TRH) by X-ray Crystallography.

SEGAL, BERNICE G. (b. 1929) Professor and Chairman, B.A. 1950, Radcliffe College; M.A. 1952, Columbia University; PhD. 1955, Columbia University. Physical and Inorganic Chemistry. Magnetic properties of matter; structures of paramagnetic inorganic complexes.

B.G. Segal "The Balmer Formula" Encyclopedia of Physics, Ed. R. Lerner and G. Trigg, Addison-Wesley (1980).

B.G. Segal and S.J. Lippard, "Transition Metal Hydroborate Complexes. 10. The Crystal and Molecular Structure of Tris (tetrahydroborato)tris(tetrahydrofuran) yttrium(III)." Inorg. Chem., 17, 844 (1978).

B.G. Segal and S.J. Lippard, "Transition Metal Hydroborate Complexes. 9. Preparation, Properties and Structure of Di-μ-cyanotrihydroborato-bis(2,2',2"-triaminotriethylamine)dinickel(II)tetraphenylborate," Inorg. Chem., 16, 1623 (1977).

BATES COLLEGE
Lewiston, ME 04240

Fall 1980 ug enrollment 1473
Degrees offered BA and BS
Telephone (207) 784-4141

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 6 . 2. Support staff, FTE's: Sec'y 0 Stockrm 3/4 Technical 3/4
3. 1980 seniors & their placement: Total 11 Grad. school 3 Industry 3 Professional schools 1 Other 4 .
4. Senior majors, average past five years: 15 .
5. Undergraduates involved in research, average past five years: Academic year 7 Summer 3
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years: None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 28,200
2. Instrumentation:
   - UV-Vis (Cary 210)
   - UV-Vis (Coleman 124)
   - NMR (Hitachi R-24A)
   - IR (Perkin-Elmer 283B)
   - IR (Perkin-Elmer 700A)
   - GC (Hewlett-Packard 5840A)
   - AA (Jarrell-Ash Dial-Atom)
   - Polarograph (PAR-174A)
   - Gel Electrophoresis Unit (Gelman)
   - Medium Pressure Liquid Chromatography
3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 44 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? Yes Standing orders for review series and annual reviews (past five years) 25 .
4. Computer facilities: 6 access ports to Dartmouth Time Sharing system; Prime 500 on-campus computer; 3 terminals located in chemistry building; large-screen computer projection classroom located in chemistry building.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Approx. $2,500/yr. for expendables; $5,000/yr. for equipment.
2. Departmental grants: NSF-69A, UV/Vis Spectrophotometer, $16,295.
3. Faculty teaching loads: Contact hours 15 Load credit for research? No
4. Sabbatical or leave support for research: Sabbatical leave, every 7th yr., at 50% salary full yr. or full salary half yr. Short Term (six weeks) leave at full salary, every 4th yr.

FACULTY PROFILE

BOYLES, JAMES G. (b. 1937) Professor and Chairman. B.S., 1959, Pennsylvania State University, Ph.D., 1966, Rutgers University, Physical Chemistry. Determination of charge-transfer complex equilibrium constants by NMR techniques. Analytical chemistry of pesticides and herbicides. Computer use in chemical education.

Boyles, J.C., Sprowles, J., Curtis, V., & D. Nygaard. "Experimental Chemistry" (an integrated general chemistry/organic chemistry laboratory manual), Bates College, 1976.

LEDLIE, DAVID B. (b. 1940) Associate Professor. B.S., 1962, Middlebury College, Ph.D., 1966, MIT, Organic Chemistry. Cyclopropyl and Perpendicular Ally Cations.

D.B. Ledlie & *G. Miller, Convenient Precursor for a Versatile Mixed Cuprate Reagent, J. Org. Chem., 44, 1006, (1979).

D.B. Ledlie, *W. Barber, & **F. Switzer, On the Conformation of the Cyclopropyl Cation, Tetrahedron Lett., 607 (1977).

D.B. Ledlie, *M. Costopolus, & G. Olah, The First Stable Cyclopropyl Cation, J. Am. Chem. Soc., 99, 4196 (1977).

D.B. Ledlie, *T. Swan, *J. Pile and *L. Bowers, Halocyclopropanes, J. Org. Chem., 41, 419 (1976).

Grant active 1977-80: Petroleum Research Fund Type B Grant, $13,000, Cyclopropyl Cations.

MACKALL, JULIA C. (b. 1945) Assistant Professor. B.S., 1967, Mary Washington College, Ph.D., 1973, Case Western Reserve University, Biochemistry. Protein Chemistry, regulation of enzyme activity.

Mackall, J.C., Meredith, M. and Lane, M.D., A Mild Procedure for the Rapid Release of Cytoplasmic Enzymes from Cultured Animal Cells, Anal. Biochem., 95, 270 (1979).

Mackall, J.C., Lane, M.D., Leonard., K.R., Pendergast, M and Kleinschmidt, A.K., Subunit Size and Protomer Structure of Avian Liver Acetyl CoA Carboxylase, J. Mol. Biol., 123, 595 (1978).

Mackall, J.C. and Lane, M.D., Role of Pyruvate Carboxylase in Fatty Acid Biosynthesis: Alterations during Adipocyte Conversion, Biochem. Biophys. Res. Commun., 79, 720 (1977).

Mackall, J.C. and Lane, M.D., Changes in Rat Mammary Gland Acetyl Coenzyme A Carboxylase Activity Associated with Lactogenic Differentiation, Biochem. J., 162, 635 (1977).

Mackall, J.C., Student, A.K., Polakis, S.E., and Lane, M.D., Induction of Lipogenesis in a "Preadipocyte" Cell Line, J. Biol. Chem., 251, 6462 (1976).

Grant active 1980-81: National Science Foundation, $16,000, Spectrophotometer for Study of Erythrocyte Glucose 6-Phosphate Dehydrogenase.

NYGAARD, DANTON D. (b. 1946) Assistant Professor. B.A., 1968, University of Wisconsin, Ph.D., 1972, Massachusetts Institute of Technology, *Analytical Chemistry*. Analysis of trace metals in natural waters. Analysis of trace toxic gases in the atmosphere.

SPROWLES, JOLYON C. (b. 1944) Assistant Professor. A.B., 1966, Princeton University, Ph.D., 1973, Cornell University, *Physical Inorganic Chemistry*; *Vibrational Spectroscopy*. Complexes of very weak bases, spectra and structure of organometallic cations and polymers.

WYLIE, PHILIP L. (b. 1949) Assistant Professor. B.A., 1971, Grinnell College, Ph.D., 1976, University of California, Davis, *Mechanistic and Synthetic Organic Photochemistry*. Photochemistry of sulfones and sulfides; synthesis of small and medium-sized cyclophanes; photochemistry of β,γ-unsaturated ketones.

R.S. Givens, P.L. Wylie and R.J. Olsen, Photoextrusion of Sulfur Dioxide, A General Route to [2.2]Cyclophanes, *J. Org. Chem.*, **44**, 1608 (1979).

R.S. Givens, W.K. Chae, J.H.-S. Liu, C.V. Neywick, W.D. Gillaspey, R.J. Olsen, and P.L. Wylie, Approaches to New Photochemical Reactions. Studies of Mechanisms and Applications of Photochemical Reactions, Petroleum Division, American Chemical Society, 152 (1979).

R.S. Givens and P.L. Wylie, Photoextrusion Reactions: SO$_2$ Extrusion as a Route to Cyclophanes, *Tetrahedron Lett.*, 865 (1978).

K.G. Hancock and P.L. Wylie, The Photochemistry of 3-Ethoxy-3-methylpent-4-en-2-one, an α-Alkoxy-β-γ-Unsaturated Ketone, *J. Org. Chem.*, **42**, 1850 (1977).

K.G. Hancock, P.L. Wylie and J.T. Lau, Photochemistry of α-Hydroxy-β,γ-Unsaturated Ketones. A Photochemical Synthesis of 1,4-Diketones, *J. Am. Chem. Soc.*, **99**, 1149 (1977).

Grants active 1979-1981: Petroleum Research Fund Type B Grant, $13,000, Cyclophanes Via SO$_2$ Photoextrusion.

*Undergraduate students   **High School project catalyst fellow

BELOIT COLLEGE
Beloit, WI 53511

Fall 1980 ug enrollment 1,100
Degrees offered B.S. and B.A.
Telephone (608) 365-3391

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 3.25. 2. Support staff, FTE's: Sec'y 0 Stockrm 0.5 Technical 0.25
3. 1980 seniors & their placement: Total 8 Grad. school 3 Industry 1 Professional schools 4 Other 0.
4. Senior majors, average past five years: 10.
5. Undergraduates involved in research, average past five years: Academic year 12 Summer 8
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

None.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 8,010
2. Instrumentation:

NMR: (Varian T-60)
IR (Bekcman AccuLab-8, IR5A)
UV-vis (Beckman DBG, Perkin-Elmer EPS-3T
Environmental Chamber (Kysor-Sherer CER88L)
Ultracentrifuge (Beckman L5-65B)
GC (Gow-Mac 150)
MS (Electrodynamics)
Gel Electrophoresis (Buchler)
Echem (PAR 174)
AA (P-E 360 w/graphite furnace)

3. Library resources: CA? yes Volume indices? yes Collected indices? no Total journal subscriptions? 40 Computer literature search service? no Separate chemistry or science library? yes Librarian? yes Standing orders for review series and annual reviews (past five years) 18.

4. Computer facilities: HP 3000 with 8 CRT's, 2 line printers, 1 graphics, and 1 high speed printer in Science Building. Tektronix Graphics terminal w/printer and plotter. PDP-8 for interfacing with equipment. 4 PET computers.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Cullister Fund--$1,300

2. Departmental grants: Gulf Oil--$10,000; NSF-URP Grant--$10,290, Research Corporation--$6,400; Institute for Scientific Research Matching Grant--$900, Govt. Excess Property Acquisitions--$40,000.

3. Faculty teaching loads: Contact hours 14 Load credit for research? No.

4. Sabbatical or leave support for research: No more than once every 4 years, at least every 7 years. One semester at full salary or two at half salary.

FACULTY PROFILE

BROWN, WILLIAM H. (b. 1932) Professor. B.S., 1954, St. Lawrence University; M.A., 1955, Columbia University; Ph.D., 1958, Columbia University. *Organic Chemistry*. Synthesis of molecules of biological interest.

W. H. Brown and J. McClarin, *Introduction to Organic and Biochemistry*, Willard Grant Press, 3rd Edition, 1980.

W. H. Brown and E. Rogers, *General, Organic, and Biochemistry*, Willard Grant Press, 1980.

LISENSKY, GOERGE C. (b. 1953) Assistant Professor. B.A., 1976, Earlham College; Ph.D., 1981, California Institute of Technology. *Analytic and Inorganic Chemistry*. Synthesis and studies of transition metal macrocyclic ligand complexes.

Grant active 1981: Cullister Fund $2,000.

ORDMAN, ALFRED B. (b. 1948) Assistant Professor. B.A., 1970, Carleton College; Ph.D., 1974, University of Wisconsin, Madison. *Biochemistry*. Enzyme mechanisms, environmental modelling and fermentation, toxicology.

A. B. Ordman and S. K. Kirkwood, UDP glucose dehydrogenase: Kinetics and their Mechanistic Implications, *Biochem. Biophys. Acta*, *481*, 25 (1977).

A. B. Ordman and S. K. Kirkwood, Mechanism of Action of UDP glucose dehydrogenase: Evidence for an essential lysine at the active site, *J. Biol. Chem.*, *252*, 1320 (1977).

Grants active 1980: Research Corporation $14,000; Cullister $2,400.

SPENCER, BROCK (b. 1939) Professor and Chairman. B.A., 1961, Carleton College; Ph.D., 1965, University of California, Berkeley. *PHYSICAL and INORGANIC CHEMISTRY*. Structural and spectroscopic properties of inorganic materials.

R. H. Banks, N. M. Edelstein, B. Spencer, D. H. Templeton, A. Zalkin, Volatility and Molecular Structure of Neptunium(IV) Borohydride, *J. Am. Chem. Soc.*, *102*, 620 (1980).

H. Ruben, B. Spencer, D. H. Templeton, A. Zalkin, Structure of Tris(urea)dioxouranium(VI) Sulfate, *Inorg. Chem.*, *19*, 776 (1980).

T. D. Tilley, R. A. Anderson, B. Spencer, H. Ruben, A. Zalkin, D. H. Templeton, Crystal Structure of Bis(pentamethylcyclopentadienyl)ytterbium(II)tetrahydrofuran Hemi(toluene) at 176 K, *Inorg. Chem.*, *19*, 2999 (1980).

BENEDICTINE COLLEGE
Atchison, Kansas 66002

Fall 1980 ug enrollment 1,043
Degrees offered BA
Telephone (913) 367-5340

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 2 . 2. Support staff, FTE's: Sec'y 0.5 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 2 Grad. school 0 Industry 0 Professional schools 2 Other 0 .
4. Senior majors, average past five years: 3 .
5. Undergraduates involved in research, average past five years: Academic year 0 Summer 1
6. Master's program? NO Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years: None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 15,000
2. Instrumentation:
   - NMR (Varian EM-360A)
   - IR (Beckman IR-8 and IR-10)
   - GC (Varian Aerograph A-90-P and series 200)
   - UV-VIS (Beckman DBG and Cary 14)
   - Polarograph (Sargent Model III)
   - Scanning Monochrometer (Heath 700)
   - Electrolytic Analyzer (Sargent-Slomin)
   - Solid State Electroanalytic Modules
   - Scintillation Detector (Tracerlab)
   - Titrimeter (Fisher)
3. Library resources: CA? Yes Volume indices? NO Collected indices? NO Total journal subscriptions? 10 Computer literature search service? NO Separate chemistry or science library? NO Librarian? NO Standing orders for review series and annual reviews (past five years) NO .
4. Computer facilities: Science Hall; PRIME 550 time sharing system, one DEC LA36 DECwriter II, one DEC LS120 Decwriter III, two Beehive B150 video terminals, and three Hazeltine 1420 video terminals

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Institution has no policy relating to research.
2. Departmental grants: NSF-ISEP grant, $13,470
3. Faculty teaching loads: Contact hours 19 Load credit for research? NO
4. Sabbatical or leave support for research: Sabbatical leave is granted when the faculty member uses his leave for research or for formal study. Remuneration: One semester at full pay or two succesive semesters at half pay.

FACULTY PROFILE

PILLAR, Rev. CONRAD J. (b 1921) Professor and Chairman. B.S. 1944, St. Benedict's College, Atchison, Kansas, Ph.D. 1955, University of Notre Dame. Organic Chemistry. Molecular Rearrangements, Organometallics.

Reactions of free radicals with metal carbonyls, in progress.

BROM, Joseph M. (b. 1942) Associate Professor, B.S., 1964, College of St. Thomas, Ph.D., 1970, Iowa State University. Physical Chemistry. Molecular spectroscopic study of gas phase energy transfer reactions, high temperature chemistry.

Five publications, 1976-1980

J.M. Brom, Jr. and W.H. Beattie, "Laser Excitation Spectroscopy of PbO: Rotational Analysis of the $a(1)-X(0^{+}0$ System," J. Molec. Spectry., 81, 445 (1980)

J.M. Brom, Jr., J.H. Kotts, and D.W. Setzer, "Quanching Rate Constants for Ne($^{3}P_{2}$) Metastable Atoms at Room Temperature," Chem. Phys. Lett., 55, 44 (1978)

J.M. Brom, Jr. and E.J. Lepak, "Afterglow from the Photodissociation of OCS in an Argon Matrix at 4^{o}K", Chem, Phys. Lett., 41, 185 (1976)

*C.J. Lauclan, J.M. Brom, Jr., and H.P. Broida, "Laser Photoluminescence of Zirconium Oxide at 4K", J. Chem. Phys., 65, 2672 (1976)

Grant active 1978-1980: Research Corporation Cottrell College Science Grant, $13,400, Metastable Atom Impact Optical Spectroscopy of High Temperature Vapors.

BEREA COLLEGE

BEREA, KY 40404

Fall 1980 ug enrollment 1500

Degrees offered B.A.

Telephone 606-986-9341 Ext 595-596

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 3 . 2. Support staff, FTE's: Sec'y 1/3 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 8 Grad. school 3 Industry 2 Professional schools 1 Other 2 .
4. Senior majors, average past five years: 9.5 .
5. Undergraduates involved in research, average past five years: Academic year 8 Summer 7
6. Master's program? NO Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

None.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 8000
2. Instrumentation:

NMR 60MHz (P.E. 24)
MS (Varian EM 600)
UV-Vis(P.E. 102)
UV-Vis(Cary 219)
IR (P.E. 337 and 710)
AA (P.E. 107)
GC (P.E. 810, Varian 700, 3760)
Gamma Spectrometer (Victoreen 400 Ch)

3. Library resources: CA? yes Volume indices? no Collected indices? yes Total journal subscriptions? 9 Computer literature search service? no Separate chemistry or science library? yes Librarian? yes Standing orders for review series and annual reviews (past five years) 4 .

4. Computer facilities: Prime 400

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: None

2. Departmental grants: du Pont College Science Grant, $7000

3. Faculty teaching loads: Contact hours 12-13 Load credit for research? None .

4. Sabbatical or leave support for research:
Sabbatical leave possible each eighth year at 2/3 salary for full year or full salary for 1/2 year.

FACULTY PROFILE

BEEBE, THOMAS R. (b. 1932) Professor. B.A. and B.S., 1954, Ohio University, Ph.D., 1960, University of Wisconsin. Organic Chemistry. Preparation and reactivity of positive organic halogens.

Grant active, 1979-80, The Reactions of Oximes, 1,2, Diols, and Benzyl Alcohols with N-Iodosuccinimide, $5,900, Research Corporation.

BLAIR, LARRY K. (b. 1944) Associate Professor. B.A., 1966, Berea College, Ph.D., 1970, Stanford University. Physical Organic and Inorganic Chemistry. Halogen-Amine complexes, 2-coordinate halogen (I) complexes.

L.K. Blair, *J. Baldwin, and *W. C. Smith, Jr., Halogen-Amine Complexes in Chemical Synthesis. 1. The Oxidation of Alcohols by 1,4-Diazabicyclo[2.2.2]-octane·2Br$_2$ Complex, J. Org. Chem., 42, 1816 (1977).

Grant active, 1979-80, 2-Coordinate Halogen (I) Complexes, $20,000, The Camille and Henry Dreyfus Foundation, Inc.

LEVEY, GERRIT (b. 1924) Professor and Chairman. B.A., 1946, Hope College, Ph.D., 1949, University of Wisconsin. Physical Chemistry. Peroxide reaction mechanisms, radiation chemistry.

BETHANY NAZARENE COLLEGE

Bethany, OK 73008

Fall 1980 ug enrollment 1291

Degrees offered B.S.

Telephone (405) 789-6400

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 2.3 . 2. Support staff, FTE's: Sec'y .25 Stockrm .5 Technical 0
3. 1980 seniors & their placement: Total 10 Grad. school 0 Industry 1 Professional schools 4 Other 5 .
4. Senior majors, average past five years: 6.2 .
5. Undergraduates involved in research, average past five years:
   Academic year 4 Summer 3
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 10,000
2. Instrumentation:

   NMR-60MHz (Varian EM-360)
   UV-Vis (Beck. DBG)
   IR (Beck. IR-10)
   GC (two H-P 7620A, H-P 5730A, P-E 800, F & M 700)
   Dig. Integ. (H-P 3371A)
   AA (B&L AC2-20)
   Spinning Band (Nester-Faust)

3. Library resources: CA? No Volume indices? No Collected indices? No Total journal subscriptions? 15 Computer literature search service? Yes Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 5 .

4. Computer facilities:

   Campus: IBM-System 34
   Department: Apple II Plus with dual disk drive, printer, color monitor.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   Department: $1500
   Catalyst (Science Alumni Support Group): $1800
2. Departmental grants:

   Catalyst: 2000 toward purchase of Apple II microcomputer system

3. Faculty teaching loads: Contact hours 19.5 Load credit for research? No

4. Sabbatical or leave support for research:

   Faculty can apply for sabbatical at 50% salary full year, full salary for ½ year. Frequency, every 7th year.

FACULTY PROFILE

BEAVER, W. DON (b. 1924) Academic Dean of the College and Professor; B.S., 1946, Bethany Nazarene College, M.S., 1953, Ph.D., 1955, Oklahoma State University. Analytical-Physical Chemistry. Analytical Instrumentation; Trace metal determination.

HEASLEY, GENE E. (b. 1932) Chairman of Division of Natural Sciences and Professor; B.A., 1955, Hope College, Ph.D., 1961, Kansas University. Organic Chemistry. Mechanisms of electrophilic addition to alkenes and dienes.
Fourteen publications, 1976-80.

G.E. Heasley, *T.R. Bower, *K.W. Dougharty, *J.C. Easdon, V.L. Heasley, S. Arnold, T.L. Carter, D.B. Yaeger, B.T. Gipe, and D.F. Shellhamer, "Electrophilic Additions to Indene and Indenone: Factors Effecting Syn Addition", J. Org. Chem., in Press.

G.E. Heasley, *D.A.Smith, *J.N. Smith, V.L. Heasley, and D.F. Shellhamer, "Halogenations of Conjugated Dienes. Bromination and Chlorination of cis-and trans-3-Methyl-1, 3-pentadiene", J.Org. Chem., in Press.

V.L. Heasley, D.F. Shellhamer, R.K. Gipe, H.C. Wiese, M.L. Oakes, and G.E. Heasley, "Reaction Methyl Hypochlorite with Certain Olefins in the Presence of Boron Trifluoride", Tetrahedron Letters, 4133 (1980).

G.E. Heasley, *J. Bundy, V. Heasley, S. Arnold, A. Gipe, D. McKee, R.Orr, S. Rodgers, and D. Shellhamer, "Electrophilic Additions to Dienes and the 1-Phenylpropenes with Pyridine-Halogen Complexes and Tribromides. Effects on Stereo-Chemistry and Product Ratios, J.Org. Chem., 43, 2793 (1978).

G.E. Heasley, V.L. Heasley, *V.M. McCully, *R.A. Skiagel, and R.T. Wiegman, "Ionic and Radical Addition of Methyl Hypochlorite to Dienes," J. Org. Chem., 41, 644 (1976).

GRANTS ACTIVE: (1980-1982), Petroleum Research Fund, $13,000, "Catalysis of Electrophilic Addition".

REINBOLD, PAUL E. (b. 1943) Chairman Department of Chemistry and Professor; A.B., 1965, Olivet Nazarene College, M.S., 1968, Purdue University, Ph.D., 1968, Texas A&M University. Analytical-Inorganic Chemistry. Chemical Instrumentation; Spectropolarimetric investigation of metal complexes, use of computers in chemistry.

*Randy Classen, *Randy Wolcott, and P.E. Reinbold, A Study by NMR of a Three-Component System: A Physical Organic Experiment, J. Chem. E., 55, 542 (1978).

*BNC Undergraduate Students

BOWDOIN COLLEGE

Brunswick, ME 04011

Fall 1980 ug enrollment 1350

Degrees offered A.B.

Telephone (207) 725-8731

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5.5. 2. Support staff, FTE's: Sec'y 1 Stockrm 1 Technical 2
3. 1980 seniors & their placement: Total 23 Grad. school 5 Industry ____ Professional schools 9 Other 9 .
4. Senior majors, average past five years: 18 .
5. Undergraduates involved in research, average past five years:
   Academic year 12 Summer 4
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:
   None.

FACILITY*, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 27,900
2. Instrumentation:

NMR (P-E R-24B)
AA (P-E 303 x 2)
GC (P-E F-11, 900, 990, 3920B)
UV-Vis (Beck. 24, P-E 202)
GC-MS HP-5992B

Beckman HPLC
Laser-Raman (Cary 83)
IR (P-E 621, 700, 21, 137, 283)
P+N detector
High Resolution UV-Visible Spectrometer with liquid He sampling

3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 41 Computer literature search service? yes Separate chemistry or science library? yes Librarian? no Standing orders for review series and annual reviews (past five years) 20 .

4. Computer facilities: Time-shared DEC-System 10. Terminal in Chemistry Building.
   DEC MINC-11 HP-9825A
   P&E IR-Data Station Spectra-Physics (P&E 22300-010)

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   Approx. 2,000/yr for expendables; 4000/yr capital equipment.

2. Departmental grants:

duPont	$7,000
NSF-ISEP	29,000 (50% Bowdoin College contribution)

3. Faculty teaching loads: Contact hours 8 Load credit for research? No .

4. Sabbatical or leave support for research:
   50% salary for full year or full salary for 1/2 year--every 7th year.

*Marine Laboratory devoted 20% chemistry - 80% biology, teaching 10%, research 90%.

FACULTY PROFILE

BUTCHER, SAMUEL S. (b. 1936) Professor and Chairman. A.B. 1958, Albion College, Ph.D., 1963, Harvard University. Physical Chemistry. Atmospheric chemistry and air pollution.

*S.D. Boyce and S.S. Butcher, The effect of a local source on the composition of precipitation in South-Central Maine, Water, Air, and Soil Pollution 6, 375 (1976).

S.S. Butcher, The correlation between light scattering and mass concentration of tobacco smoke, J. Air Poll. Control Assoc. 26, 997 (1976).

S.S. Butcher and *D.I. Buckley, A preliminary study of particulate emissions from small wood stoves, J. Air Poll. Control Assoc. 27, 346 (1977).

S.S. Butcher and E.M. Sorenson, A study of wood stove particulate emissions, J. Air Poll. Control Assoc. 29, 724 (1979).

CHRISTENSEN, RONALD L. (b. 1945) Assistant Professor. A.B., 1967, Oberlin College, M.A., 1969, Harvard University, Ph.D., 1973, Harvard University. Physical Chemistry. Optical spectroscopy of conjugated systems of photochemical and photobiological significance, the effects of solvents on electronic structure, applications of fluorescent probes.

*K.L. D'Amico,*C. Manos, and R.L. Christensen, "Optical Spectroscopy of Simple Polyenes: Electronic Energies as a Function of Polyene Length," J. Am. Chem. Soc., March 12, 1980 issue.

M.F. Granville, G.R. Holtum, B.E. Kohler, K.L. D'Amico, and R.L. Christensen, "Experimental Confirmation of the Dipole Forbidden Character of the Lowest Excited Singlet State in 1,3,5,7-Octatetraene," J. Chem. Phys. 70, 5930 (1979).

R.L. Christensen and J.H. van der Waals, "X-Traps in Benzene Crystals: Phosphorescence Spectrum and Zero-Field Splitting of the Triplet State," Chem. Phys. Ltrs. 45, 221 (1977).

B.D. Cheson, R.L. Christensen, R. Sperling, B.E. Hokler, and B.M. Babior, "The Origin of the Chemiluminescence of Phagocytosing Granulocytes," The Journal of Clinical Investigation 58, 789 (1976).

R.L. Christensen and B.E. Kohler, "High-Resolution Optical Spectroscopy of Polyenes Related to the Visual Chromophore," J. Phys. Chem. 80, 2197 (1976).

Grants Active, 1978-80: ACS-PRF(Type B), $13,000, Optical and Photochemical Studies of Simple Polyenes.

1979-81: Research Corporation, $15,900, High Resolution Optical Spectroscopy of Polyene Schiff Bases.

MAYO, DANA W. (b. 1928) Professor. B.S., 1952, Massachusetts Institute of Technology, Ph.D., 1959, Indiana University. Organic Chemistry. Natural products; marine chemistry; environmental effects of oil pollution.

D.S. Page, D.W. Mayo, J.F. Cooley, E. Sorenson, E.S. Gilfillan and S.A. Hanson, "Hydrocarbon Distribution and Weathering Characteristics at a Tropical Oil Spill Site," Proceedings of 1979 Oil Spill Conference, EPA/API/USGC Los Angeles, 1979, pp. 709-712.

MAYO, DANA W., cont'd

D.W. Mayo, D.S. Page, J. Cooley, *E. Sorenson, F. Bradley, E.S. Gilfillan, and S.A. Hanson, Weathering Characteristics of Petroleum Hydrocarbons Deposited in Fine Clay Marine Sediments, Searsport, Maine, J. Fish. Res. Board Can. 35, 552 (1978).

E.S. Gilfillan, D.W. Mayo, D.S. Page, *D. Donovan, and S.A. Hanson, Effects of Varying Concentrations of Petroleum Hydrocarbons in Sediments on Carbon Flux in *Mya arenaria*, Part III. Petroleum Hydrocarbons, in Physiological Responses of Marine Biota to Pollutants, edited by T.J. Vernberg, A. Calabrese, F.P. Thurberg and W.B. Vernberg, Academic Press, New York, 1977.

L.J. Bellamy and D.W. Mayo, Infrared Frequency Effects of Lone Pair Interactions with Antibonding Orbitals on Adjacent Atoms, J. of Phys. Chem. 80, 1217 (1976).

Grants Active, 1980: DMR, $13,500, Gas Chromatographic Study of March Grass, Soft Shelled Clams and Marine Sediments in the Piscataqua River Region.
1980: API, $300,000, "Oil Spill Dispersant Study."

NAGLE, JEFFREY K. (b. 1953) Assistant Professor. A.B. 1975, Earlham College, Ph.D., 1979, University of North Carolina at Chapel Hill. Inorganic Chemistry. Photochemical and photophysical studies of transition metal coordination compounds.

R.C. Young, J.K. Nagle, T.J. Meyer, D.G. Whitten, "Electron Transfer Quenching of Nonemitting Excited States of Ru(TPP)(py)$_2$ and Ru(trpy)$_2^{2+}$," J. Am. Chem. Soc., 100, 4773 (1978).

B.P. Sullivan, H. Abruna, H.O. Finklea, D.J. Salmon, J.K. Nagle, T.J. Meyer, H. Sprintschnik, "Multiple Emissions from Charge Transfer Excited States of Ruthenium(II)-Polypyridine Complexes," Chem. Phys. Lett., 58, 389 (1978).

C.R. Bock, J.A. Connor, A.R. Gutierrez, T.J. Meyer, D.G. Whitten, B.P. Sullivan, J.K. Nagle, "Application of Electron Transfer Theory to Excited State Redox Processes," Chem. Phys. Lett., 61, 522 (1978).

C.R. Bock, J.A. Connor, A.R. Gutierrez, T.J. Meyer, D.G. Whitten, B.P. Sullivan, J.K. Nagle, "Estimation of Excited State Redox Potentials by Electron-Transfer Quenching. Application of Electron-Transfer Theory to Excited-State Redox Processes," J. Am. Chem. Soc., 101, 4815 (1979).

J.K. Nagle, W.J. Dressick, T.J. Meyer, "Electron Transfer Reactions in the 'Abnormal' Free-Energy Region," J. Am. Chem. Soc., 101, 3993 (1979).

PAGE, DAVID S. (b. 1943) Associate Professor. B.S., 1965, Brown University, Ph.D. 1970, Purdue University. BioOrganic Chemistry. Reaction mechanisms of oxidative enzymes and model systems. Fate and effects of petroleum in the marine ecosystem.

E.S. Gilfillan, D.W. Mayo, D.S. Page, *D. Donovan, and S. Hanson, "Effects of Varying Concentrations of Petroleum Hydrocarbons in Sediments on Carbon Flux in *Mya arenaria*," Physiological Responses of Marine Biota to Pollutants, F.J. Vernberg, et al. editors, Academic Press, 1977.

D.W. Mayo, D.S. Page, J. Cooley, *E. Sorenson, F. Bradley, E. Gilfillan and S.A. Hanson, "Weathering Characteristics of Petroleum Hydrocarbons Deposited in Fine Clay Marine Sediments," Searsport, Maine, J. Fisheries Res. Bd. Can. 35, 552 (1978).

PAGE, DAVID S., cont'd

D.S. Page, D.W. Mayo, J.F. Cooley, *E. Sorenson, E.S. Gilfillan and S.A. Hanson, "Hydrocarbon Distribution and Weathering Characteristics at a Tropical Oil Spill Site," Proceedings of 1979 Oil Spill Conference, EPA/API/USCG Los Angeles, 1979, pp. 709-712.

Grants Active, 1978-80: Maine Department of Marine Resources: $40,000, "The Effect of Petroleum on Tumor Induction in Soft Shell Clams."

1978-present: Mobil Foundation, $45,000, "Tropical Oil Spill Fate and Effects Studies."

1980: API/BLM/DOE/EPA/USGS/NOAA, $150,000, "Bioavailability of Toxic Constituents of Used Drilling Muds."

1980: API, $300,000, "Oil Spill Dispersant Study."

SETTLEMIRE, C. THOMAS (b. 1937) Associate Professor. B.S. 1959, Ohio State University, M.S. 1961, Ohio State University, Ph.D. 1967, North Carolina State University. Biochemistry. Membrane biochemistry.

C.T. Settlemire and W.T. Hughes, Microbiology for Health Students. Reston-Prentice-Hall, 1978.

BRADLEY UNIVERSITY
Peoria, IL 61625

Fall 1980 ug enrollment 4200
Degrees offered B.S., B.A., and M.A.
Telephone (309) 676-7611

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 8. 2. Support staff, FTE's: Sec'y 1.0 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 8 Grad. school 5 Industry 3
Professional schools 0 Other 0.
4. Senior majors, average past five years: 10.
5. Undergraduates involved in research, average past five years: 9
Academic year 6 Summer 3
6. Master's program? yes Master's degrees conferred, average past five years: 1
7. National honors, undergraduate or senior majors, past five years:

None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 26,000
2. Instrumentation:

NMR (Varian A-60)
UV-VIS (Beckman DK-2 and DU)
AA (P-E 290-B and Jarrell-Ash 82-360)
X-Ray Diffractometer (GE XRD-5)
IR (Beckman IR4, P-E 237 and 700)
HPLC (Tracor 2100)
GC (Varian 1520 and Autoprep 700, Tracor-2000, Sadtler CIRA 101, Beckman 45)
Fluorometer (Turner 111)
Polarograph (Sargent XV)
Osmometer (Mechrolab 301)

3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 35 Computer literature search service? yes Separate chemistry or science library? no Librarian? yes Standing orders for review series and annual reviews (past five years) 10.

4. Computer facilities:
Department: PDP-8 with two terminals and a terminal to the campus Cyber 171
Campus: Cyber 171 with 40 dial-up and 20 hard-wired terminals

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
About $1,000/yr for chemicals and travel expenses. Bradley generated research funds by internal granting about $1,900/yr.
2. Departmental grants: None

3. Faculty teaching loads: Contact hours 12 Load credit for research? no.

4. Sabbatical or leave support for research: One-half salary for full-year or full salary for one-half year. Frequency: every 7th year.

FACULTY PROFILE

CUMMINGS, THOMAS F. (b. 1925) Professor. B.S., 1947, Massachusetts Institute of Technology, Ph.D., 1955, Case Insititue of Technology. Analytical Chemistry. Analytical determination of heavy metals in environmental samples.

B. J. Mathis, T. F. Cummings, M. Gower, M. Taylor, and C. King, Dynamics of Cadmium, Manganese and Lead in Experimental Power Plant Ponds, Hydrobiologia, 67, 197 (1979).

FIELD, KURT W. (b. 1944) Assistant Professor. B.A., 1966, Hiram College, Ph.D., 1970, Case Western Reserve University. Organic Chemistry. Formation and cleavage of C-N bonds, thermal decompositions, and tautomerism.

K. W. Field, A. D. Glover, *J. S. Moroz, *D. J. Collander, and K. E. Kolb, "Crown Ether" Synthesis, J. Chem. Educ., 56, 269 (1979).

E. J. Drexler and K. W. Field, An NMR Study of Keto-Enol Tautomerism in β-Dicarbonyl Compounds, J. Chem. Educ., 53, 392 (1976).

GAYHART, ROBERT B. (b. 1942) Associate Professor. B.A., 1964, Bellarmine College, Ph.D., 1969, University of Illinois. Inorganic Chemistry. Synthesis and characterization of thiourea complexes of group III A cations and the determination of air pollutants.

R. B. Gayhart and T. Moeller, Observations on the Rare Earths-LXXXIX, J. Inorg. Nucl. Chem., 39, 49 (1977).

R. B. Gayhart and T. Moeller, Observations on the Rare Earths-LXXXVIII, J. Inorg. Nucl. Chem., 38, 2319 (1976).

GLOVER, A. DONALD (b. 1938) Associate Professor. B.A., 1960, Culver-Stocton, Ph.D., 1965, Carnegie Institute of Technology. Organic Chemistry. Glucose metabolisn and the photochemistry of keto steroids.

K. W. Field, A. D. Glover, *J. S. Moroz, *D. J. Collander, and K. E. Kolb, "Crown Ether" Synthesis, J. Chem. Educ., 56, 269 (1979).

KOLB, KENNETH E. (b. 1928) Professor and Chairman. B.S., 1948, University of Louisville, Ph.D., 1953, Ohio State University. Organic Chemistry. Mechanistic studies: halogenations, nitric acid oxidations, and Friedel-Crafts type reactions; integration of industrial chemistry into academics.

Eight publications, 1976-1980

K. E. Kolb and M. A. Taylor, Keeping Chemistry Relevant, J. Chem. Educ., 57, 20 (1980).

D. Kolb and K. E. Kolb, The Chemistry of Glass, J. Chem. Educ., 56, 604 (1979).

D. Kolb and K. E. Kolb, Petroleum Chemistry, J. Chem. Educ., 56, 465 (1979).

K. E. Kolb and *B. J. Helmer, Two Organic Laboratory Experiments with Benzylic Hydrocarbons, J. Chem. Educ., 56, 201 (1979).

*P. D. Clark and K. E. Kolb, The Association Constants of Organic Complexes of Iodine, J. Org. Chem., 42, 359 (1977).

TAYLOR, MAX A. (b. 1941) Associate Professor. B.S., 1963, Colorado College, Ph.D., Massachusetts Institute of Technology. Physical Chemistry. Surface chemistry, thermodynamics, and water pollutants.

K. E. Kolb and M. A. Taylor, Keeping Chemistry Relevant, J. Chem. Educ., 57, 20 (1980).

TAYLOR, MAX A., cont'd

M. A. Taylor and L. H. Princen in "Fatty Acids," E. H. Pryde, Ed., Americal Oil Chemists Society, Champaign, IL, 1979, Chapter 10.

B. J. Mathis, T. F. Cummings, M. Gower, M. Taylor, and C. King, Dynamics of Cadmium, Manganese and Lead in Experimental Power Plant Ponds, Hydrobiologia, 67, 197 (1979).

BUCKNELL UNIVERSITY

Lewisburg, PA 17837

Fall 1980 ug enrollment 3130

Degrees offered B.S., A.B. & B.S.-M.S.

Telephone (717) 524-3258

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 10. 2. Support staff, FTE's: Sec'y 1½ Stockrm 1½ Technical 1½
3. 1980 seniors & their placement: Total 17 Grad. school 2 Industry 3
   Professional schools 7 Other 5.
4. Senior majors, average past five years: 27.
5. Undergraduates involved in research, average past five years:
   Academic year 40 Summer 30
6. Master's program? Yes Master's degrees conferred, average past five years: 4
7. National honors, undergraduate or senior majors, past five years:

None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft² 49,174
2. Instrumentation:

NMR - 60 MHz (Varian A60A and EM 360)
UV-Vis (Cary 14 and Beckman DB-GT)
Dri-Lab Inert Atmosphere Box
Spectrofluorimeter (A-B SPF)
Hewlett-Packard 5985B CC/MS/Data System
GC (P-E 900 and Varian 1740)
HPLC (P-E 601, Waters ALC-GPC-244, SP-8700)
IR (P-E 137 and P-E 337)
Polarographic Analyzer (P.A.R.174)
Varian ^{13}C NMR Spectrometer

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 93 Computer literature search service? Yes Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 49.

4. Computer facilities:

Xerox-Honeywell Sigma VII Computer (campus)
Honeywell DPS-C3 Computer (campus)
DEC LA36 Terminals (Department)

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   $38,000 for supplies; $12,400 for equipment; $1,200 for travel; $26,500 for student stipends.
2. Departmental grants:
   NSF-URP $19,880; Dow $1,000; Dreyfus $35,000; duPont $6,500; Merck $8,000; Other $115,000.

3. Faculty teaching loads: Contact hours 12 Load credit for research? occasional

4. Sabbatical or leave support for research:
   Faculty can apply for sabbatical leave at 50% salary full year; full salary for ½ year. Frequency averages every 7th year.

FACULTY PROFILE

COOPER, JOHN N. (b. 1938) Associate Professor. B.S., 1960, California Institute of Technology, Ph.D., 1964, University of California (Berkeley). Physical/Inorganic Chemistry. Kinetics of inorganic substitution and redox reactions.

Nine publications, 1976-80.

J.N. Cooper, *W. Reents, M. Woods, R. Sjoblom and J. Sullivan, Kinetic Study of the Reduction of Np(VI) and Pu(VI) by Iodide Ion in Aqueous Perchlorate Media, Inorg. Chem., 16, 1030(1977).

*S.E. King, J.N. Cooper and *R.D. Crawford, Oxidation of Hydrazine by Iodine in Aqueous Perchloric Acid, Inorg. Chem., 17, 3306(1978).

*J.A. Shamay, J.N. Cooper and *R.J. Barto, On the Purported [Coen$_2$S$_2$O$_3$Cl] and [Coen$_2$S$_2$O$_3$]Br, J. Inorg. Nucl. Chem., 41, 121(1979).

J.N. Cooper, *J.D. McCoy, *M.G. Katz and E. Deutsch, Trans Effect in Octahedral Complexes 4 Kinetic Trans Effect Induced by the S-Bonded Thiosulfato Ligand in Bis(Ethylenediamine)Cobalt(III) Complexes, Inorg. Chem., 1980, 19, 2265.

*J.P. Mittleman, J.N. Cooper and E.A. Deutsch, Coordination Stabilization of Reactive Molecules: Preparation of trans-[(en)$_2$Co(OH$_2$)(S$_3$O$_3$)]$^+$: a Cobalt(III) Complex Containing Disulphane Monosulphonate, J. Chem. Soc. Chem. Comm., 1980, 733.

Grant active 1980-82: The Petroleum Research Fund, #12355-B3, $13,000, Thiosulfato Bisethylenediamine Co(III) Derivatives.

HEINE, HAROLD W. (b. 1922) Professor and Head. B.S., 1944, Rutgers University, Ph.D., 1948, Rutgers University. Heterocyclic Chemistry. Aziridines, diaziridines, benzodiazepines, nitrones, neighboring group effects, 1,3-dipolar additions.

Six publications, 1976-80.

H.W. Heine, L.M. Baclawski, S.M. Bonser and G.D. Wachob, Reactions of Some 1,-2-Diacyldiaziridines, J. Org. Chem., 41, 3229(1976).

H.W. Heine and *C. Tintel, The Synthesis of a 2,4-Benzodiazepine-1,5-dione and a 1,3-Diazepine-4,7-dione, Tetrahedron Letters 23(1978).

*R.H. Heistand, *M.A. Stahl and H.W. Heine, The Reaction of α-Aryl-N-Alkyl- and α,N-Diarylnitrones with Aroyl Chlorides. A New Synthesis of N-alkyl-O-aroylhydroxylamines, J. Org. Chem., 43, 3613(1978).

H.W. Heine, D. Ludovici, J.A. Pardoen, R. Weber, *E. Bonsall, Reactions of 2,4-Benzodiazepines, J. Org. Chem., 44, 3843(1979).

H.W. Heine, *L.S. Lehman, A. Glaze, A.P. Douglas, Novel Rearrangement of a Diaziridine, J. Org. Chem., 45, 1317(1980).

Grant active 1980-82: The Petroleum Research Fund, #12185-B1, $13,000, Chemistry of Nitrones. Manufacturing Chemist Catalyst Award 1980.

KIEFT, LESTER (b. 1912) Professor. A.B., 1934, Hope College, Ph.D., 1939, Pennsylvania State University. Analytical/Inorganic Chemistry.

Lester Kieft and Bennett R. Willeford Jr., "Joseph Priestley - Scientist, Theologian, Metaphysician", Bucknell Press, Lewisburg, PA (1980).

NOLAN, STEVEN M. (b. 1952) Laboratory Director. B.A., 1974, Cambridge, M.A., 1977, Cambridge.

One publication, 1975-80.

Tris(phenylthio)methyllithium as a formyl anion equivalent in conjugate addition Preparation of unprotected γ-Ketoaldehydes. T. Cohen and S. M. Nolan, Tetrahedron Letters, 3533(1978).

ROOT, CHARLES A. (b. 1938) Associate Professor. A.B., 1960, Ohio Wesleyan University, M.S., 1972, The Ohio State University, Ph.D., 1965, The Ohio State University. Inorganic Chemistry. Complexes of aziridine and azetidine derivatives.

SCOUTEN, WILLIAM H. (b. 1942) Associate Professor. A.B., 1964, Houghton College, Ph.D., 1969, University of Pittsburgh. Biochemistry. Biochemical preparations and enzyme reactions.

Eleven publications, 1976-80.

M.L. Roberts, W.H. Scouten and S.E. Nyquist, Isolation and Characterization of the Cytoplasmic Droplet in the Rat, Biology of Reproduction, 14, 421(1976).

C. Lewis and W.H. Scouten, Photooxidation of Methionine with Immobilized Methylene Blue as Photooxidizer, Biochim. Biophys. Acta, 444, 326(1976).

W.H. Scouten and *G.L. Firestone, N-propyldihydrolipoamide Glass Beads: An Immobilized Reducing Agent, Biochim. Biophys. Acta, 453, 277(1976).

W.H. Scouten, *H. Knowles Jr.,*L.C. Freitag and *W. Iobst, Lipoamide Dehydrogenase Immobilized on Porous Glass, Biochim. Biophys. Acta, 482, 11(1977)

W.H. Scouten, Affinity Chromatography: Bioselective Adsorption on Inert Supports, ca. 250 pp. Wiley-Interscience monograph, in press.

Grant active 1980: Dreyfus Teacher-Scholar Grant, $25,000.

SMITH, MANNING A. (b. 1915) Professor. A.B., 1937, Swarthmore College, Ph.D., 1940, Massachusetts Institute of Technology. Organic Chemistry. Periodate oxidation of flavonols, 3-substituted flavones.

Grant active 1980-82: The Petroleum Research Fund, #11657-B1, $13,000, New Flavone Chemistry.

VEENING, HANS (b. 1931) Professor. A.B., 1953, Hope College, M.S., 1955, Purdue University, Ph.D., 1959, Purdue University. Analytical Chemistry. High performance liquid chromatography and gas chromatography-mass spectrometry of biochemically active compounds.

Seven publications, 1976-80.

F.C. Senftleber, *A.G. Halline, H. Veening and D.A. Dayton, Reversed Phase Liquid Chromatographic Analysis of Hemodialysate from Uremic Patients, Clin. Chem., 22, 1522(1976).

*D.W. Bastian, *R.L. Miller, *A.G. Halline, F.C. Senftleber and H. Veening, High Performance Liquid Chromatography of Urinary Compounds, An Undergraduate Experiment, J. Chem. Educ., 54, 766(1977).

E.J. Knudson, Y.C. Lau, H. Veening and D.A. Dayton, Time-Concentration Studies of HPLC of Metabolites Removed During Hemodialysis, Clin. Chem., 24, 686(1978).

H. Veening, HPLC as a Clinical Method for Monitoring Hemodialysis of Renal Patients, Biological/Biomedical Applications of Liquid Chromatography, 2, 93(1979).

H. Veening and B.R. Willeford, HPLC in Organometallic and Coordination Chemistry, Reviews in Inorganic Chemistry, 1, 281(1979).

Grants active 1979-82: NIH, $95,000, "Chemical Studies on Fluids from Hemodialysis Patients"; Petroleum Research Fund, $13,000, HPLC of Physiological Fluids.

WILLEFORD, BENNETT R. (b. 1921) Professor. A.B., 1943, Emory University, M.S., 1949, University of Wisconsin, Ph.D., 1950, University of Wisconsin. Physical/Inorganic Chemistry. Studies of arene metal carbonyls.

Eight publications, 1976-80.

R.D. Rieke, J.S. Arney, W.E. Rich, B.R. Willeford, and *B.S. Poliner, Electrochemical Generation of Stable Arene Metal Tricarbonyl Dianions, J. Amer. Chem. Soc., 97, 5951(1975).

*S.R. Kurtz, O.T. Anderson and B.R. Willeford, A New Simple Apparatus for the Measurement of Dipole Moments, J. Chem. Educ., 54, 181(1977).

H.Veening and B.R. Willeford, High Performance Liquid Chromatography in Organometallic and Coordination Chemistry. Rev. Inorg. Chem., 1, 281(1979).

C.L. Zimmerman, *S.L. Shaner, *S.A. Roth and B.R. Willeford, A Kinetic Study of Some Ligand Exchange Reactions of Arenetricarbonylchromium Complexes, J. Chem. Research, 1980, (S)108, (M)1289.

W.J.A. VandenHeuvel, R.W. Walker, *S.B. Nagelberg, and B.R. Willeford, Comparison of Electron Impact and Chemical Ionization Mass Spectra of Some Arene Tricarbonylchromium Complexes, J. Organometal. Chem., 190, 73(1980).

Grant active 1980-81: Petroleum Research Fund, $13,000. Arene Metal Carbonyls.

WINSTEAD, MELDRUM B. (b. 1926) Professor. B.S., 1946, Davidson College, M.A., 1949 and Ph.D., 1952, University of North Carolina, Chapel Hill. Organic Chemistry. Carbon-11-labeled radiopharmaceuticals.

Ten publications, 1976-80.

M.B. Winstead, *D.A. Dougherty, T.H. Lin, A.Khentigan, J.F. Lamb, and H.S. Winchell, Relationship of Molecular Structure to In Vivo Scintigraphic Distribution of Carbon-11-Labeled Compounds. 4. Carbon-11-Labeled Mandelonitriles, Mandelic Acids, and Their Esters, Journal of Medicinal Chemistry, 21, 215(1978).

M.B. Winstead, *C.A. Ciccarelli and H.S. Winchell, Liberation of Cyanide from α-Aminonitriles Relative to Amygdalin, Journal of Pharmacology and Experimental Therapeutics, 205, 751(1978).

M.B. Winstead, *D.D. Dischino and H.S. Winchell, Concentration of Activity in Brain Following Administration of Carbon-11-Labeled α-p-Iodoanilinophenylacetonitrile, International Journal of Applied Radiation and Isotopes, 30, 293(1979).

M.B. Winstead, *D.D. Dischino and H.S. Winchell, Relationship of Molecular Structure to the In Vivo Distribution of Carbon-11-Labeled Compounds. V. Carbon-11-Labeled N-Alkyl-p-iodobenzenesulfonamides, Nuklearmedizin, 18, 142(1979).

M.B. Winstead, *D.D. Dischino, *N.A. Munder, *C. Walsh, and H. S. Winchell Relationship of Molecular Structure to In Vivo Distribution of Carbon-11-Labeled Compounds. VI. Carbon-11-Labeled Aliphatic Diamines, European Journal of Nuclear Medicine, 5, 165(1980).

CALVIN COLLEGE
Grand Rapids, MI 49506

Fall 1980 ug enrollment 4100
Degrees offered BS AB
Telephone (616) 949-4000

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 8. 2. Support staff, FTE's: Sec'y 1/2 Stockrm 1 Technical 1
3. 1980 seniors & their placement: Total 28 Grad. school 6 Industry 4 Professional schools 12 Other 6.
4. Senior majors, average past five years: 35.
5. Undergraduates involved in research, average past five years: Academic year 5 Summer 3
6. Master's program? No Master's degrees conferred, average past five years: 0
7. National honors, undergraduate or senior majors, past five years:

none

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 25,000
2. Instrumentation:

NMR (Jeol JNM-PMX 60)
IR (Beckman Acculab 2, Perkin-Elmer 700)
UV-VIS (Beckman DB, DU, Hitachi PE 124)
MS (Varian EM600)
GC (Varian 1200, Shimadzu GC4B)
DSC (DuPont 900)
AA (Perkin-Elmer 103)
X-Ray (Seifert, Nonius)
HPLC (Anspec)

3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 31 Computer literature search service? no Separate chemistry or science library? yes Librarian? no Standing orders for review series and annual reviews (past five years) 3.

4. Computer facilities: Two PRIME 400 computers on campus. Terminals in building.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

$2000 for supplies, $2000 for equipment

2. Departmental grants:

duPont	$7000	NSF-ISEP $6417
Johnson's Wax	$2500	NSF-Sc. Fac. Prof. Dev. $14,000

3. Faculty teaching loads: Contact hours 15 Load credit for research? No.

4. Sabbatical or leave support for research:

Sabbatical leave after six years of teaching, full salary for half year, half salary for full year.

FACULTY PROFILE

ALBERS, ROBERT J. (b. 1937) Professor. A.B., 1959, Calvin College, Ph.D., 1962, University of Connecticut. Biochemistry. Polypeptides Models for Protein Structure and Function.

G. Vanderkooi, *K. M. Kale, R. J. Albers, L. Vitello, and G. C. Kresheck, Thermodynamics of Model Membrane Systems Studied by Titration Calorimetry, International Symposium on Biomolecular Structure, Conformation, Function and Evolution. R. Srinwasan, Editor, 1978.

Albers, R. J., B. Coffin, F. M. Rottman. 1980. Analysis of mRNA 5'-terminal Cap Structures and Internal N^6-methyladenosine by reverse phase HPLC. Analytical Biochemistry. In press.

Nilson, J. H., A. R. Thomason, S. Horowitz, N. L. Sasavage, *J. Blenis, R. J. Albers, W. Salser, F. M. Rottman. Construction and characterization of a cDNA clone containing a portion of the bovine prolactin sequence. Nucleic Acid Research, 8;1561-1573(1980)

*Vitello, L., G. C. Kresheck, R. J. Albers, J. E. Erman, G. Vander Kooi. Block Poly (Als)-Poly (Lys). A water-soluble model for intrinsic membrane proteins. Biochimica et Biophysica Acta, 557; 331-339(1979)

*Kale, K. M., L. Vitello, G. C. Kresheck, G. Vander Kooi, R. J. Albers. Thermometric titrations studies of the interaction of block polypeptides with surfactants. Biopolymers, 18; 1889-1900(1978)

BLANKESPOOR, RONALD L. (b. 1946) Professor. B.A., 1968, Dordt College, Ph.D., 1971, Iowa State University. Organic Chemistry. Cyclic voltammetric and ESR studies of ion radicals.

Seven publications, 1976-1980.

G. A. Russell, V. Malatesta, T. Morita, C. Osuch, R. L. Blankespoor, K. D. Trahanovsky, and E. Goettert, "Ketyles of Cyclic α,β-Unsaturated Ketones. 2. Formation of Radical Anions by Electron Transfer Using Trimethyl-silylsodium or Dimethyl Sulfoxide-Potassium tert-Butoxide, J. Amer. Chem. Soc., 101, 2112 (1979).

D. Dougherty, R. L. Blankespoor, and S. P. McGlynn, "Photoelectron Spectroscopy of Carbonyls. Bicyclo[2.2.1]-heptane-2,3-diones and Bicyclo[2.2.1]hept-5-ene-2,3-diones," J. of Electron. Spectroscopy and Related Phenomena, 16, 245 (1979).

G. R. Russell, V. Malatesta, and R. L. Blankespoor, Radical Anions of Substituted Cyclobutene-1,2-diones, J. Org. Chem., 43, 1837 (1978).

R. L. Blankespoor and *D. Gollehon, Long-Range Proton Electron Spin Resonance Splittings in Radical Anions of Bicyclo[2.2.1]hept-5-ene-2,3-diones, J. Org. Chem., 42, 63(1977).

R. L. Blankespoor and *C. M. Snavely, An ESR Study of the Radical Anion of 7,8-Dimethylene-1,3,5-cyclooctatriene, J. Org. Chem., 41, 207(1976).

BROENE, HERMAN H. (b. 1919) Professor. A.B., 1942, Calvin College, Ph.D., 1947, Purdue University. Physical Chemistry. Thermodynamics, Radiochemistry, Chemical Education.

DEKOCK, ROGER L. (b. 1943) Associate Professor. A.B., 1965, Calvin College, Ph.D., 1970, University of Wisconsin-Madison. *Inorganic Chemistry*. Electronic structure and chemical bonding.

Eight publications, 1976-1980, and one textbook.

R. L. DeKock, A. J. Kromminga, and *T. S. Zwier, The Symmetry of Atomic States and Atomic Orbitals, *J. Chem. Ed.*, *56*, 510(1979).

R. L. DeKock and *D. S. Caswell, Structure of the Tricyano Ion, *Inorg. Chim. Acta*, *37*, L469 (1979).

R. L. DeKock and *M. R. Barbachyn, Proton Affinity, Ionization Energy, and the Nature of Frontier Orbital Electron Density, *J. Am. Chem. Soc.*, *101*, 6516 (1979).

E. L. Andersen, R. L. DeKock, and T. P. Fehlner, Substituent Effects in Cluster Species. 3. Structural Consequences of Intercage π Interactions in the Dimer and Trimer of $1,5\text{-}C_2B_3H_5$, *J. Am. Chem. Soc.*, *102*, 2644 (1980).

R. L. DeKock, *M. A. Shehfeh, D. R. Lloyd, and P. J. Roberts, Ultraviolet Photoelectron Spectra of Thiazyl Chloride, *J. Chem. Soc. Faraday II*, *72*, 807 (1976).

LEEGWATER, ARIE (b. 1940) Associate Professor. B.A., 1962, Calvin College, Ph.D., 1967, Ohio State University. *Organic Chemistry*. Intramolecular catalysis and stereochemistry, history of science.

MEHNE, LARRY F. (b. 1949) Visiting Assistant Professor. B.S., 1971, Pennsylvania State University, Ph.D., 1976, University of Pennsylvania. *Physical Chemistry*. Magnetic resonance and higher oxidation states in transition metal complexes, energetics of coordinated small molecules, methods for instrumental analysis.

B. B. Wayland, L. F. Mehne, and J. Swartz, Mono- and Bis-carbonyl Complexes of Iron (II) Tetraphenylporphyrin, *J. Am. Chem. Soc.*, *100*, 2379(1978).

PIERS, KENNETH (b. 1941) Professor, B. Sci. (Hon.), 1963. University of Alberta, Ph.D., 1966, University of Alberta. *Organic Chemistry*. Organic synthesis and natural products, pheromones.

VANDOORNE, WILLIAM (b. 1937) Professor and Chairman, B.S., 1960, Calvin College, Ph.D., 1965. University of Michigan. *Inorganic Chemistry*. Crystallography, phosphorus and boron compounds, coordination compounds.

W. VanDoorne and *M. Hannink, Complexes of Cobalt, Nickel, and Zinc with Formic, Acetic, Propionic, and Chloroacetic Acids, *Synth. React. Inorg. Met.-Org. Chem.*, in press.

CANISIUS COLLEGE
BUFFALO, NY 14208

Fall 1980 ug enrollment 3649
Degrees offered BS
Telephone (716) 883-7000

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 9 . 2. Support staff, FTE's: Sec'y 1.0 Stockrm 1.0 Technical 0.25
3. 1980 seniors & their placement: Total 5 Grad. school 2 Industry 2 Professional schools 1 Other 0 .
4. Senior majors, average past five years: 7 .
5. Undergraduates involved in research, average past five years:
   Academic year 5 Summer 5
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 Classroom and chemistry laboratory space: 14,000 ft.
2. Instrumentation:

   NMR (P-E R24B)
   GC (H-P 5756)
   GC (Varian 3760)
   AA (P-E 460)
   IR (Beckman 4250)
   UV-Vis (Cary 14)
   Computer (DGC Micro)
   Spec. Anal. (ARL 26100-1)
   Liquid Chromatograph (Varian 5000)
   Solution Calorimeter (Parr 145)

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 42 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 14 .

4. Computer facilities: In addition to the College Mainframe, Burroughs 2750, the Chemistry Department has a Time-sharing Nova 2 Mini with 10 M byte disk; Micronova with 12.5 M byte disk and lab subsystem; three (3) LSI-11's, two with lab subsystem, one with dual diskettes.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: No distinction is made between Instruction Budget and Research.

2. Departmental grants: Strengthening Developing Institutions Program (SDIP) grant, $125,000.
   NSF-CAUSE grant, $95,000.

3. Faculty teaching loads: Contact hours 12 Load credit for research? No .

4. Sabbatical or leave support for research: Full salary for one semester, or one-half salary for two semesters. Only tenured faculty are eligible after 6 years.

FACULTY PROFILE

ANNINO, RAYMOND (b. 1927) Professor and Chairman. B.A., 1950, Columbia University, Ph.D., 1955, Oklahoma State University. Analytical Chemistry. Chromatography, Electrochemistry, Instrument Design.

Eight publications, 1976-1980; 3 patents, 1977.

R. Annino, M-F Gonnord and G. Guiochon, "Fluidic Logic Element Sample Switch for Correlation Chromatography", Anal. Chem., 51, 379 (1979).

G. Gaspar, R. Annino, C. Vidal-Madjar and G. Guiochon, "Influence of Instrumental Contributions on Apparent Column Efficiency in High Speed Chromatography", Anal. Chem., 50, 1512 (1978).

R. Annino and W. E. Jordan, "A Simple Automatic Single Component Analyzer Based on Gas Chromatography; Breath Alcohol and Breath Acetone", J. Phys. E: Sci. Instr., 11, 581 (1978).

R. Annino and *R. Voyksner, "Theoretical and Experimental Operating Characteristics of a Pneumatic Gas Chromatographic Detector", J. Chromatogr., 142, 131 (1977).

R. Annino, "Signal Enhancement Techniques in Chromatography", in Advances in Gas Chromatography, Giddings, Grushka, Cazes and Brown, Eds., Vol. 15, Marcel Dekker, 1977, pp. 33-63.

BIERON, JOSEPH F. (b. 1937) Professor, B.S., 1959 (Canisius College, M.S., 1961, Canisius College, Ph.D., 1965, State University of New York at Buffalo. Organic Chemistry. Equilibrium studies by nuclear magnetic Resonance and environmental studies of drinking water quality.

Edward J. Kikta, Jr. and J. F. Bieron, The Enol-Imine to Keto-Enamine Tautomerization Involved in the Formation of 3-Benzylamino-5-dimethylcyclohex-2-enone, Org. Mag. Resonance, 8, 192-197 (1976).

DINAN, FRANK J. (b. 1933) Professor, B.S., 1959, University of Buffalo, Ph.D., 1963, State University of New York at Buffalo. Organic Chemistry. Synthesis of biologically active molecules and carbon-13 NMR spectroscopy.

F. J. Dinan and T. Bardos, "Synthesis of Some New S-Alkylated Derivatives of 5-Mercapto-2'-deoxyuridine as Potential Antiviral Agents", J. Med. Chem., 23, 569 (1980).

F. J. Dinan and S. A. Sojka, "The ^{13}C NMR Spectra of 4-substituted Pyridine N-Oxides", J. Org. Chem., 44, 307 (1979).

Grant Active 1980, Research Corporation, $10,800, "An Investigation of Simplified Nucleoside Synthesis".

HEFFLEY, PHILLIP D. (b. 1934) Associate Professor, B.S., 1956, State University of New York at Buffalo, Ph.D., 1966, State University of New York at Buffalo. Analytical Chemistry. Water pollution analysis.

LEONE, JIM (b. 1937) Associate Professor of Chemistry and Computer Science, B.S., 1961, University of Cincinnati, M.A., 1963 and Ph.D., 1965, The Johns Hopkins University. Laboratory Automation. Hi Speed GC and Computerized Instrumentation.

McCARTHY, PAUL, J. (b.1924) Professor, B.A., 1950, Spring Hill College, M.S., 1952, College of the Holy Cross, Ph.D., 1955, Clark University. Inorganic Chemistry. Optical spectroscopy and structure of transition metal complexes.

Ten publications, 1976-1980.

P. J. McCarthy, J. C. Lauffenburger, and M. M. Schreiner, "The Crystal Structure, Low-temperature Crystal Spectra and IR Spectra of Tricesium dichlorotetraaquovanadium(III) chloride and Some Analogous Molecules", Inorg. Chem., accepted for publication. Volume, page # & year not available yet.

P. J. McCarthy, J.C. Lauffenburger, and P. M. Skonezny, "The Crystal Structure and Low-temperature Crystal Spectra of Dicesium dichlorotetraaquochromium (III) Chloride", Inorg. Chem., accepted for publication. Year, volume, & page not available yet.

I. M. Walker, A. B. P. Lever, and P. J. McCarthy, "The Electronic Spectra of Coordinated Nitrite Ion: Correlation between Spectra and Structure". Can. J. Chem. 58, 823 (1980).

P. J. McCarthy and J. Reedijk, "Low-temperature ligand-field and far-infrared spectra of trans-dichlorotetrakis (5-methyl-pyrazole) nickel(II) and trans-dibromotetrakis (5-methylpyrazole) nickel(II)", Inorg. Chim. Acta. 40, 239 (1980).

A.B.P. Lever, I.M. Walker and P.J. McCarthy, "Single Crystal Electronic Spectra, Electron Spin Resonance, and Magnetic Data for Some High Spin Tetragonal Cobalt(II) Complexes at Cryogenic Temperatures", Inorg. Chim. Acta., 39, 81 (1980).

STANTON, RICHARD E. (b.1931) Professor. B.S., 1952, Niagara University, Ph.D., 1957, University of Notre Dame. Theoretical Chemistry. Quantum chemistry; mathematical properties of self-consistent-field methods; group theory.

R.E. Stanton, "The Existence and Cure of Intrinsic Divergence in Closed Shell SCF Calculations", J. Chem. Phys., accepted for publication. Volume, page # and year not available as yet.

R. E. Stanton, "Hartree-Fock and Correlation Energies of Expanded Metallic Hydrogen", J. Chem. Phys., 67, 5947 (1977).

Grant active 1980-1982, Research Corporation Cottrell College Science Grant, $10,800, "A PARTRAN Approach to the Determination of Roothaan-Hartree-Fock Wavefunctions".

VAN VERTH, JAMES E. (b. 1928) Professor, B.S., 1950, Xavier University, M.S., 1952, University of Detroit, Ph.D., 1957, Indiana University. Organic Chemistry. Singlet oxygen reaction mechanisms. PRF (1981-82) Grant active $13,000 "Alkoxide Photooxidation."

James E. Van Verth, "A Versatile Basic Program for Test Generation Using a Small Time-Sharing Minicomputer System", Proc. Soc. Educ. Data Systems, 1978, 307.

James E. Van Verth and *Simon W. Ulmer, "Catalytic Dehydrogenation of Tetrahydrocarbazole", J. Chem. Ed., 54, 383 (1977).

ZAPISEK, WILLIAM F. (b. 1935) Professor. B.A., 1960, Syracuse University, M.S., 1966 and Ph.D., 1968, University of Connecticut. Biochemistry of Aquatic Pollution. Identification, quantification and characterization of aquatic industrial pollutants with regard to their impact on a fresh water estuary.

J. Black, M. Holmes, B. Paigen, P. Dymerski, and W. Zapisek. Fish Tumor Pathology and Aromatic Hydrocarbon Pollution in a Great Lakes Estuary. Chapter in Environmental Science Research Series: Volume 16, edited by B. Afghan and D. MacKay, Plenum Press (1980).

J. Black, P. Dymerski, and W. Zapisek, "A Routine Chromatographic Method for Assessing Polynuclear Aromatic Hydrocarbon Pollution in Fresh Water Environments", Journal of Environmental Contamination and Toxicology, 22, 278-284 (1979).

J. Black, M. Holmes, C. Wenner, and W. Zapisek, Carcinogenesis Studies in a Western New York Great Lakes Aquatic Environment. Proceedings of the American Association for Cancer Research, 19,60 (1978).

CARLETON COLLEGE
Northfield, MN 55057

Fall 1980 ug enrollment 1726
Degrees offered BA
Telephone (507) 663-4406

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 6 . 2. Support staff, FTE's: Sec'y 0.60 Stockrm 0.75 Technical 0.30
3. 1980 seniors & their placement: Total 30 Grad. school 6 Industry 15 Professional schools 9 Other 0 .
4. Senior majors, average past five years: 32 .
5. Undergraduates involved in research, average past five years: Academic year 14 Summer 7
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:
   1977 - Andrew W. Maverick, NSF graduate fellowship.
   1977 - Robert B. Weinstock, NSF graduate fellowship.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 19,000
2. Instrumentation:

   NMR (P-E R24B)
   MS (Varian EM 600)
   GC (P-E 3920)
   IR's (P-E 337 and 700)
   AA (P-E 303)
   UV-Visible - Two Cary 15's
   Heath-Schlumberger 700 with Aminco-Morrow Stopped Flow Apparatus
   Polarograph (PAR 174)
   Digital Coulometer (PAR 179)

3. Library resources: CA? Yes Volume indices? Yes Collected indices? No Total journal subscriptions? 40 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? Yes Standing orders for review series and annual reviews (past five years) 30 .

4. Computer facilities: Department; Two DEC VT-50 video terminals, two DEC LA-36 Decwriter II, Tektronix 4010 graphics terminal & Teletype ASR 33. Campus; DEC VAX 11/780 time sharing system.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: About $2,000/year for chemicals, project grants and travel expenses.

2. Departmental grants: Du Pont grant, $7,000; Dreyfus Foundation grant, $8,000; NSF ISEP grant, $5,100; Shell Foundation grant, $3,000; 3M grant, $3,000; Johnson's Wax Fund, $2,500.

3. Faculty teaching loads: Contact hours 12 Load credit for research? no .

4. Sabbatical or leave support for research: One-third salary after three years of teaching, full salary for one-half year after six years teaching and two-thirds salary for full year after seven years teaching. Frequency averages eight years.

FACULTY PROFILE

CARLIN, CHARLES H. (b. 1939) Professor. B.A., 1961, Carthage College, M.A., 1964, Ph.D., 1966, The Johns Hopkins University. Organic Chemistry. Synthetic organic electrochemistry, mechanisms of electrochemical oxidation.

CHILD, WILLIAM C., Jr. (b. 1927) Professor. B.A., 1950, Oberlin College, Ph.D., 1955, University of Wisconsin. Physical Chemistry. Transport properties of molten carbonate cells, differential calorimetry, Raman spectroscopy of molten salts.

W. C. Child, D. H. Smith, and G. M. Begun, "Raman Spectroscopy of Molten Mixtures of Lithium and Potassium Sulfate," Proceedings of the VIIth Intern. Conf. on Raman Spectroscopy, Ottawa, Canada, 1980; North-Holland Publ. Co., 1980, pp. 268-9.

FINHOLT, JAMES E. (b. 1933) Professor. B.A., 1955, St. Olaf College, Ph.D., 1960, University of California, Berkeley. Inorganic Chemistry. Preparation, structures and mechanisms of chromium(III) complexes, organochromium chemistry, x-ray diffraction of inorganic complexes.

MAHAFFY, PETER G. (b. 1954) Assistant Professor. B.A., 1974, Dordt College, Ph.D., 1979, Indiana University. Organic Chemistry. Vacuum pyrolysis, gas-phase electron diffraction, organosilicon chemistry, study of short-lived species.

P. G. Mahaffy, R. Gutowsky, and L. K. Montgomery, "An Electron Diffraction Study of 1,1-Dimethylsilaethylene," J. Am. Chem. Soc., 102, 2854 (1980).

P. G. Mahaffy, J. D. Wieser, and L. K. Montgomery, "An Electron Diffraction Study of p-Xylylene," J. Am. Chem. Soc., 99, 4514 (1977).

Grant active 1979-80: Research Corporation Cottrell College Science Grant, $11,350, Direct Observation of a Transient Silicon-Nitrogen π-Bonded Reaction Intermediate.

MOHRIG, JERRY R. (b. 1936) Professor and Chairman. B.S., 1957, University of Michigan, Ph.D., 1963, University of Colorado, Boulder. Organic Chemistry. Stereochemistry of 1,2-elimination reactions, stereospecific synthesis, enzymic catalysis, the structure and chemistry of alkanediazonium ions.

J. R. Mohrig and D. C. Neckers, Laboratory Experiments in Organic Chemistry, 3rd Edition, D. Van Nostrand Company, 1979.

J. R. Mohrig and *S. M. Shapiro, "An Enzyme-Catalyzed Resolution of Amino Acids," J. Chem. Educ., 53, 586 (1976).

Grant active 1979-80: The Petroleum Research Fund - Type B, $13,000, Stereochemistry of Elimination Reactions.

RAMETTE, RICHARD W. (b. 1927) L. M. Gould Professor of Chemistry. B.A., 1950, Wesleyan University, Ph.D., 1954, University of Minnesota. Analytical Chemistry. Aqueous solution equilibria, electroanalytical chemistry, computers in chemical data processing.

R. W. Ramette, Chemical Equilibrium and Analysis, Addison-Wesley Publishing Co., 1981.

R. W. Ramette, "Exocharmic Reactions," J. Chem. Educ., 57, 68 (1980).

R. W. Ramette, "On Deducing the pK-Temperature Equation," J. Chem. Educ., 54, 280 (1977).

RAMETTE, RICHARD W., cont'd

K. H. Khoo, R. W. Ramette, C. H. Culberson, and R. G. Bates, "Determination of Hydrogen Ion Concentrations in Seawater from 5 to 40 °C: Standard Potentials at Salinities from 20 to 45 ‰," Anal. Chem., 49, 29 (1977).

R. W. Ramette, C. H. Culberson, and R. G. Bates, "Acid-Base Properties of Tris-(hydroxymethyl)aminomethane (Tris) Buffers in Seawater from 5 to 40 °C," Anal. Chem., 49, 867 (1977).

Grant active 1979-80: NSF LOCI, $17,800, New Experiments for Analytical Instruction.

WEISS, LUCY C. (b. 1951) Assistant Professor. B.S., 1972, Roanoke College, Ph.D., 1977, University of Virginia. Physical Chemistry. Electronic spectroscopy, magnetic circular dichroism, electronic structure of transition-metal ions.

J. Applequist, K. R. Sundberg, M. L. Olson, and L. C. Weiss, "A Normal Mode Treatment of Optical Properties of a Classical Coupled Dipole Oscillator System with Lorentzian Band Shapes," J. Chem. Phys., 70, 1240 (1979).

L. C. Weiss, P. J. McCarthy, J. P. Jasinski, and P. N. Schatz, "Absorption and Magnetic Circular Dichroism Spectra of Hexafluoroosmate(IV) and Hexafluoroiridate(IV) in the Cubic Host Cs_2GeF_6," Inorg. Chem., 17, 2689 (1978).

CARROLL COLLEGE
Waukesha, WI 53186

Fall 1980 ug enrollment 1138
Degrees offered B.A. and B.S.
Telephone (414) 547-1211

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 4 . 2. Support staff, FTE's: Sec'y 1/3 Stockrm 3/4 Technical 1/2
3. 1980 seniors & their placement: Total 7 Grad. school 2 Industry 5 Professional schools 2 Other 1 .
4. Senior majors, average past five years: 11 .
5. Undergraduates involved in research, average past five years:
   Academic year 8 Summer 3
6. Master's program? No Master's degrees conferred, average past five years? N/A
7. National honors, undergraduate or senior majors, past five years:

   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 8700
2. Instrumentation:

   NMR - 60 MHz (P-E R-24B)
   LC (Waters)
   IR (P-E 599 and 727)
   GC - Carle 311
   - Varian 3700
   - HP 5880

   AA (Techtron Model 5)
   Fluorometer (Farrand Mark I)
   Polarograph (PAR Model 364)
   UV - VIS (P-E 550, P-E 559)

3. Library resources: CA? Yes Volume indices? No Collected indices? No Total journal subscriptions? 20 Computer literature search service? Yes Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 10 .

4. Computer facilities: PRIME 550 Computer with time-sharing capability in the computing center. Chemistry has Hazeltine 1510 CRT terminals.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   Approx. $5000/year chemicals and glassware; $6000/year for equipment.

2. Departmental grants:
   Dept. of Nat. Resources $4500
   Johnson's Wax Fund, $2500
   Johnson Wax Fund, $150,000 (3 year)
   Dept. of Energy, $800

3. Faculty teaching loads: Contact hours 15 Load credit for research? Occasional

4. Sabbatical or leave support for research: Faculty can apply for sabbatical leave at 50% salary full year, full salary for 1/2 year. Frequency averages every 7th year.

FACULTY PROFILE

BAYER, RICHARD E. (b. 1932) Professor. B.S., 1954, Carroll College, Ph.D., 1959, Indiana University. Analytical Chemistry. Water chemistry, food chemistry, cosmetics, polymer chemistry and environmental chemistry.

R.E. Bayer, "Evaluation of Chemical Atmosphere in Science Laboratories," J. Chem. Ed., 57, A287, (1980).

Grants active:

Bionomics Corporation, continuing research contract in excess of $18,000 per year. Undergraduates and faculty do applied research on a variety of problems.

NSF Local Course Improvement, $42,500, Making Safety and Health Principles Part of the Science Curriculum.

HUDSON, EARL N. (b. 1938) Associate Professor. B.S., 1960, Albion College, Ph.D., 1970 University of Illinois. Biochemistry. Development of a microanalytical assay for Vitamin A appropriate for developing world laboratories in collaboration with nutritional biochemists at the Institute de Nutricion de Centro America y Panama (INCAP), Guatemala, Central America. Development of safety-health educational components related to emergency response needs in academic laboratories.

SCHULTZ, EMERIC (b. 1946) Lecturer. B.S., 1968, University of California, Berkeley, Ph.D., 1974, University of Illinois. Biochemistry. Responsible for entire freshman laboratory program.

WATKINS, RICHARD J. (b. 1941) Associate Professor and Chairman. B.S., 1965, Carroll College, Ph.D., 1969, Indiana University. Organic Chemistry. Synthesis and reactions of small-ring compounds.

CARTHAGE COLLEGE

Kenosha, WI 53141

Fall 1980 ug enrollment 1110

Degrees offered BA

Telephone 414-551-8500

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 4 . 2. Support staff, FTE's: Sec'y 0.25 Stockrm 0.0 Technical 0.0
3. 1980 seniors & their placement: Total 5 Grad. school 2 Industry 2 Professional schools 0 Other 1 .
4. Senior majors, average past five years: 8 .
5. Undergraduates involved in research, average past five years:
   Academic year 3 Summer 1
6. Master's program? no Master's degrees conferred, average past five years; N/A
7. National honors, undergraduate or senior majors, past five years:

   1976 John Bleeke, NSF graduate fellowship.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 10,374'
2. Instrumentation:
   NMR (Varian EM-300)
   UV (P.E. 200)
   IR's (Beckman IR-10 and Beckman Acculab 4)
   AA (Jarrel-Ash)
   GC (Barber - Colman #5340)
   Fluorescence (PE-204S)
   Polarograph (Sargent Model XV)
   Magnetic Susc. (Cahn Electrobalance)
3. Library resources: CA? yes Volume indices? yes Collected indices? no Total journal subscriptions? 32 Computer literature search service? no Separate chemistry or science library? no Librarian? N/A Standing orders for review series and annual reviews (past five years) 9 .
4. Computer facilities: Department; Apple II
   Campus; PDP 11/44

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   About $1,000/yr for chemicals, project grants and travel expenses.
2. Departmental grants: Johnsons Wax, $2,500
3. Faculty teaching loads: Contact hours 12 Load credit for research? no .
4. Sabbatical or leave support for research: Full salary for one-half year after six years teaching.

FACULTY PROFILE

HADE, ROBERT L. (b. 1920) Associate Professor. B.A., 1943, Carthage College; M.S. Ed., Illinois State University, 1951. Chemical Education. Preparation of High School Chemistry Teachers.

HANSEN, PAUL V. JR. (b. 1931) Professor. B.S., 1952, Dana College; M.S., 1954, Northwestern University; Ph.D., 1965, University of Nebraska. Physical Chemistry. Association and H-bonding; Phase diagram studies, catalytic oxidation of carbon monoxide. Thermodynamic properties of association.

HAMM, KENNETH L. (b. 1923) Professor (Chairman). B.A., 1947, Carthage College; M.A., 1948, University of Illinois; Ph.D., 1957, University of Iowa. Organic Chemistry. Synthesis and oxidation of 1, 1-Dibenzyl hydrazines. S-(benzyl) thiouronium salt derivatives of carboxylic acids.

STROMMEN, DENNIS P. (b. 1938) Associate Professor. B.S., 1966, Wisconsin State University-Whitewater; Ph.D., 1971, Cornell University. Inorganic Chemistry/Spectroscopy. Theory and interpretation of the resonance Raman effect and associated phenomena, low temperature synthesis, Pt anti-cancer drugs.

Nine Publications, 1976-1980.

W.L. Peticolas, D.P. Strommen and V. Lakshminarayanan, "The Use of Resonant Raman Intensities in Refining Molecular Force Fields for Wilson G-F Calculations and Obtaining Excited State Molecular Geometries," J. Chem. Phys., (Nov. 1, 1980).

R.S. Czernuszewicz, D.P. Strommen and K. Nakamoto, "Resonance Raman Spectra of α-Diimine Complexes. 3. Novel Inorganic Compounds Containing Two Chromophoric Centers," Inorg. Chem., 19, 793 (1980).

R.S. Czernuszewicz, D.P. Strommen and K. Nakamoto, "Resonance Raman Spectra of Bis(dithiooxalato) nickel (II) ion-Stannic Iodide Adduct," Inorg. Chim. Acta., 34, L211 (1979).

D.P. Strommen, "A Pedagogical Approach to the Direct Product," J. Chem. Ed., 56, 248 (1979).

D. Tevault, D.P. Strommen and K. Nakamoto, "Reaction of Mercury Halides with CO, NO, N_2 and Unsaturated Hydrocarbons in Argon Matrices," J. Amer. Chem. Soc., 99, 2297 (1977).

CHAPMAN COLLEGE

Orange, CA 92666

Fall 1980 ug enrollment 1100

Degrees offered BS, BA

Telephone (714) 997-6831

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 4 . 2. Support staff, FTE's: Sec'y 0.5 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 3 Grad. school 0 Industry 1 Professional schools 1 Other Public Health, 1.
4. Senior majors, average past five years: 4-5 .
5. Undergraduates involved in research, average past five years:
   Academic year 20 Summer 8
6. Master's program? no Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 10,000
2. Instrumentation:
   NMR Varian EM -360
   U.V.-Vis. (Beckman Model 25)
   G.C. (Beckman GC-65 & Carle)
   AA Varian
   LS-250 Beckman
   IR Beckman (Acuulab 4 and IR-4)
   SCM Ultrascan
   Beckman DV-II
   Polarograph (Sargent)
   MPI Electroanalytical System

3. Library resources: CA? yes Volume indices? yes Collected indices? no Total journal subscriptions? 25 Computer literature search service? yes Separate chemistry or science library? no Librarian? yes Standing orders for review series and annual reviews (past five years) 8 .

4. Computer facilities: NCR large computer with terminals, Tetronix 4051 with hard copy unit and plotter, 3 Apple II desk top computers.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Lab space exclusively dedicated to research, equipment and some supplies.

2. Departmental grants:
   Union Oil Foundation $ 2,000

3. Faculty teaching loads: Contact hours 12 Load credit for research? 1/8 / SCH

4. Sabbatical or leave support for research:
   One year of half salary or half a year at full salary. Frequency averages 8 years.

FACULTY PROFILE

GRITTON, VANCE G. (b. 1930) Associate Professor and Chairman. B.S., 1955, Oregon State University, M.S., Oregon State University, 1967. Analytical Chemistry. Trace element analysis. Applications of analytical methods to archeological research. "Sourcing Techniques for Ceramics" Syro-Mesopotamian Studies, vol. 3 , 4 (1980).

Atomic Absorption Spectroscopy of Archaelogical Ceramic Materials, Advances in Chemistry, 171, 258-270 (1978).

KAKIS, FREDERIC, J. (b. 1930) Professor, B.S. 1960, City College of New York, Ph.D., 1964, Stanford University. Organic Chemistry. Synthesis, Reaction Mechanisms. Adsorption and Heterogeneous catalysis.

F.J. Kakis, Joyce Kakkis* and Pete Fotinakes,* "Student Research and Creativity: The Multiple Components of Discovery" The Chemist, 53, 6(1976).

ROSSI, CARL J. (b. 1930) Associate Professor. B.S. 1952, Rutgers University, Business Administration, B.S., 1957 Chemistry, Seton Hall University, Ph.D. Chemistry 1961, Rutgers University. Polymer Chemistry and Physical Chemistry.

WILLIAMS, VICTOR A. (b. 1936) Assistant Professor. B.S. Chemistry, 1959, University of Illinois. M.S. Analytical Chemistry 1962, Stanford University, Ph.D. 1974, University of Washington. Inorganic Chemistry. The Chemistry of Silicon and Germanium. Inorganic Synthesis and Reactions.

CHRISTIAN BROTHERS COLLEGE

Memphis, TN 38104

Fall 1980 ug enrollment 1400

Degrees offered BS

Telephone (901) 278-0100

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5 . 2. Support staff, FTE's: Sec'y 1 Stockrm ½ Technical ½
3. 1980 seniors & their placement: Total 6 Grad. school 2 Industry 3
   Professional schools 1 Other ________.
4. Senior majors, average past five years: 4 .
5. Undergraduates involved in research, average past five years:
   Academic year 2 Summer 1
6. Master's program? No Master's degrees conferred, average past five years: NA
7. National honors, undergraduate or senior majors, past five years: None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 12,000
2. Instrumentation:

NMR (Varian T-60)	GC with temperature Programing (Sargent-Welch)
IR (Beckman IR-10)	GC isothermal (Gow-Mac)
UV-Vis (Beckman DB-G)	LC isocratic (Gow-Mac)
AA (Beckman)	Metal Atom Reactor

3. Library resources: CA? some Volume indices? some Collected indices? some Total journal subscriptions? 16 Computer literature search service? No Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) No .

4. Computer facilities: PE 8/32 with terminals in various locations. Apple Microcomputer with disk drive.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Common chemicals and glassware $1000/yr.

2. Departmental grants: None

3. Faculty teaching loads: Contact hours 16 Load credit for research? limited .

4. Sabbatical or leave support for research: Yes, one semester at full salary or two semesters at half salary every seven years. Leave of absence without pay.

FACULTY PROFILE

BEER, DON C. (b. 1942) Assistant Professor. B.S., 1964, Bluffton College, Ph.D., 1972, Indiana University. Inorganic and Analytical Chemistry. Synthesis structure and catalytic activity of metal cluster compounds.

D.C. Beer and H.B. Boyter, "Hydridometallocarboranes and Their Use as Homogeneous Catalysts., J. Organomet. Chem., 1980

BUSLER, WILLIAM J. (b. 1944) Assistant Professor. B.S., 1966, Christian Brothers College; Ph.D., 1977, University of Tennessee Center for the Health Sciences. Physical Biochemistry. Difference-sedimentation studies of carbonmonoxy- and deoxy- hemoglobins A and S. Ultracentrifugation, isothermal compressibility, chronopotentiometry, NMR, GC.

COOPER, MARGUERITE B. (b. 1917) Assistant Professor. B.A., 1937, Womens College of North Carolina, M.S., 1968, Memphis State University, Ph.D., 1974, Memphis State University. Isolation of the DNA-protein complex from Escherichia coli and comparison of the acid-soluble proteins with histones. The effect of barbituates, steroid hormones, and metal cofactors and inhibitors on glycolysis in cell free extracts, carbonic anhydrase, invertase, lipase, and (in the future) other enzyme systems.

OELKERS, BROTHER JAMES ALBERT, (b. 1916) Associate Professor. B.S., 1938, St. Mary's College, Winona, Mn., M.S. 1947 Catholic University of America. D. C. Physical Chemistry. Mechanisms of Reduction of Copper Oxide Films by Hydrogen and Carbon Monoxide.
J. Albert Oelkers, Experiments in General Chemistry, C.B.C. Press, 1979.

WESCOTT, LYLE D. JR., (b. 1937) Professor and Head. B.S., 1959, Georgia Institute of Technology, Ph.D., 1963, The Pennsylvania State University. Organic Chemistry. Reactions of metal atom species with organic substrates.

Peter K. Freeman, Thomas A. Hardy, John R. Balyeat and Lyle D. Wescott, Jr., Hydrogen Migration in 2-Carbena-6,6-dimethylnorbornane, J. Org. Chem, 42, 3356 (1977)

Lyle D. Wescott, Jr., *Clint Williford, *Frank Parks, *Margaret Dowling, *Susan Sublett and Kenneth J. Klabunde, Reactions of Magnesium Atoms with Cyclic Ketones, J. Am. Chem. Soc., 98, 7853 (1976)

COE COLLEGE
Cedar Rapids, IA 52402

Fall 1980 ug enrollment 1170
Degrees offered B. A.
Telephone (319) 399-8588

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 4. 2. Support staff, FTE's: Sec'y 1/10 Stockrm 1/2 Technical 1/2
3. 1980 seniors & their placement: Total 4 Grad. school 1 Industry 1 Professional schools 1 Other 1.
4. Senior majors, average past five years: 7.
5. Undergraduates involved in research, average past five years: Academic year 2 Summer 3
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

None.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 20,000
2. Instrumentation:

NMR - 60 MHz (PE R24B)
GC - Bendix 2200
GC - Tracor 550 (EC)
IR - Beckman IR-8
AA - PE-103
Centrifuge - Sorvall RC 2-B
UV-Vis - Beckman DK-2A
UV-Vis - Beckman DB
HPLC - Altex 110A

3. Library resources: CA? yes Volume indices? no Collected indices? no Total journal subscriptions? 18 Computer literature search service? yes Separate chemistry or science library? yes Librarian? no Standing orders for review series and annual reviews (past five years) 9.

4. Computer facilities:

Campus Digital pdp 11/70. Five academic terminals.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

$1,000.00

2. Departmental grants:

Johnson's Wax $2,500.00

3. Faculty teaching loads: Contact hours 14 Load credit for research? No.

4. Sabbatical or leave support for research:

Sabbatical leaves - 50% salary full year, full salary for 1/2 year. Sabbatical and other prof. development fund; 25% from the individual faculty member, 75% institutional and grant money.

FACULTY PROFILE

CARR, DUANE T. (b. 1932) Associate Professor. B.A., 1954, Western State College (Colorado), Ph.D., 1962, Purdue University. Physical Chemistry. Chemical Education, Computers in Chemistry, Science and Religion.

KEISER, JEFFREY E. (b. 1941) Associate Professor and Chairman. A.B., 1962, Kalamazoo College, Ph.D., 1966, Wayne State University. Organic Analytical Chemistry. Trace analysis for organic chemicals in a variety of matrices.

K.W. Kirby, H. Tremmel, and J.E. Keiser, Determination and Metabolism of Ethylene Dibromide in Minipigs, Bull. Environm. Contam. Toxicol., 24, 774 (1980).

K.W. Kirby, J.E. Keiser, J. Groene, E.G. Slach, Confirmation of Paranitrophenol as a Urinary Metabolite at the Nanogram Level, J. Agric. Food Chem., 27, 757 (1979).

D.M. Baske, J.E. Keiser, R.V. Smith, The Gas Chromatographic Determination of Apomorphine in Plasma, J. Chromatogr., 140, 57 (1977).

P.W. Erhardt, R.V. Smith, T.T. Sayther, J.E. Keiser, Thin-Layer Chromatography of Apomorphine and its Analogs, J. Chromatogr., 116, 218 (1976).

WATKINS, STANLEY R. (b. 1929) Professor. B.S., 1951, New Mexico State University, Ph.D., 1958, University of Colorado. Analytical Chemistry. Trace metal analysis in biological systems.

S.R. Watkins, J. Baron, T.R. Tepley, Identification of Cobalt Protoporphyrin IX Formation in vivo Following Cobalt Administration to Rats, Biochemical Pharmacology, 29, 2319 (1980).

S.R. Watkins, R.M. Hodge*, D.C. Cowman*, P.P. Wickham, A Cadmium Binding Serum Protein, Biochem.Biophys. Res. Commun., 74, 1403 (1977).

WICKHAM, PETER P. (b. 1935) Professor. B.A., 1956, Amherst College, Ph.D., 1961, Massachusetts Institute of Technology. Organic Chemistry. Organic synthesis and the development of new synthetic reagents; studies on protein-metal association; modified RNA synthesis.

S.R. Watkins, R.M. Hodge*, D.C. Cowman*, P.P. Wickham, A Cadmium Binding Serum Protein, Biochem. Biophys. Res. Commun., 74, 1403 (1977).

T.R. Koch*, and P.P. Wickham, A New Method for the Preparation of Bismuth (III) Triesters, J. Org. Chem., 44, 157 (1979).

COLGATE UNIVERSITY
Hamilton, N.Y. 13346

Fall 1980 ug enrollment 2550
Degrees offered BA, MAT
Telephone (315) 824-1000 ext. 395

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 8 . 2. Support staff, FTE's: Sec'y 1 Stockrm 1 Technical 1
3. 1980 seniors & their placement: Total 13 Grad. school 5 Industry 1 Professional schools 6 Other 1 .
4. Senior majors, average past five years: 11 .
5. Undergraduates involved in research, average past five years:
   Academic year 9 Summer 4
6. Master's program? MAT Master's degrees conferred, average past five years? 0
7. National honors, undergraduate or senior majors, past five years: none

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 28,000 (new, 1979)
2. Instrumentation:
   - (a) NMR: Varian 360L
   - (b) MS: Hitachi-PE RMU6D
   - (c) X-ray: Norelco 12045 B/3
   - (d) VPC: Varian 1400, 920, 90P, 202
   - (e) HPLC: PE LC55
   - (f) UV-Vis: Cary 14, 219; Beckman/Gilford DU; Beckman ACTA-MIV
   - (g) IR: PE 599B, 257, 710B, 700
   - (h) AA: Varian 575
   - (i) Optical Multichannel Analyzer: PAR 1205A, D, McPherson 218
   - (j) Liq. Scint.: Packard C3380/554
3. Library resources: CA? Y Volume indices? Y Collected indices? Y Total journal subscriptions? 36 Computer literature search service? Y Separate chemistry or science library? Y Librarian? Y Standing orders for review series and annual reviews (past five years) 5 .
4. Computer facilities: D.E.C. PDP-10 with 3 disc drives, 35 terminals, etc. Also two PDP-8's in Science Division. No time charges for computer usage

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Approximately $6000/year supplies, $6000/year equipment, $2000/year student summer research stipends.
2. Departmental grants: Shell $500; General Electric $4,000; Mobil $1000
3. Faculty teaching loads: Contact hours 16 Load credit for research? rare .
4. Sabbatical or leave support for research: Faculty obtain sabbatical leave for full year at 1/2 salary or 1/2 year at full salary every seven years. May earn research leave 1/2 year at full pay every fourth year.

FACULTY PROFILE

BRACKETT, ELIZABETH (b. 1931) Assistant Professor (part-time). B.S. 1953 University of Missouri, Ph.D. 1957 University of California, Berkeley. *Physical Chemistry*. X-ray Chrystallography. Structure Determination of Small Molecules.

E.B. Brackett, C. E. Pfluger and M.T. Pfluger, 5-Methoxysalicylaldoxime *Acta Cryst*., B34, 1017-1019 (1978).

COCHRAN, JOHN (b. 1935) Associate Professor B.A. 1957 College of Wooster, M.A. 1960 University of North Carolina, Ph.D. 1967 University of New Hampshire. *Organic Chemistry*. Chemistry of Group IV Organometallic Compounds.

LEWIS, DAVID K. (b. 1943) Associate Professor A.B. 1964 Amherst College, Ph.D. 1970 Cornell University. *Physical Chemistry*. Gas Phase Kinetics, Experimental Work Using Shock Tubes and Flow Systems. Ten publications 1976-1980; two in press.

D.K. Lewis, S.E. Giesler* and M.S. Brown*, Further Study of Cyclopropane Structural Isomerization Behind Reflected Shock Waves, *Int. Jour. Chem. Kinetics*, *X*, 277(1978).

S.H. Bauer and D.K. Lewis, Shock Tube Kinetics; Revitalized Old Problems and Some Evolving New Ones, *Proc. 11th Int. Symp. on Shock Tubes and Shock Waves*, Univ. of Wash. Press, Seattle, 1977.

D. K. Lewis, S.A. Feinstein* and P.M. Jeffers, Cyclobutane Thermal Decomposition Rates at 1300-1500 K, *J. Phys. Chem.*,*81*, 1887 (1977).

K. Varde and D.K. Lewis, Hydrogen Peroxide Emission Levels from a Hydrogen Fueled Internal Combustion Engine, *Jour. Air Pollution Control Association*, *27*. 678 (1977).

D.K. Lewis, Di-tert-butyl Peroxide Decomposition Behind Shock Waves, *Can. J. Chem.*, *54*, 581 (1976).

Grant active 1978-80: Cottrell College Science Grant, $5,500, Kinetic and Mechanistic Studies of Unimolecular Reactions.

RESSNER, ERIC (b. 1948) Assistant Professor B.S. 1969 Clarkson College, Ph.D. 1974 University of Kansas. *Organic and Biochemistry*. Proteins which interact specifically with different forms of DNA. Design and synthesis of drugs which interact with DNA.

E.C. Ressner, P. Fraher, M.S. Edelman and M.P. Mertes, Synthesis of 5-Substituted Uracil Derivatives, *J. Med. Chem.*, *19*, 194 (1976).

W.R. Bauer, E.C. Ressner, J. Kates and J.V. Patzke A DNA Nicking-closing Enzyme Encapsidated in Vaccinia Virus, *Proc. Nat. Acad. Sci. USA*, *74*,1841 (1977).

E.C. Ressner, M.P. Mertes and A. Kampf, S-Formyluracil Dimethyl Acetal, Nucleic Acid Chemistry, ed. L.B. Townsend and R.S. Tipton (John Wiley & Sons) 1978, p. 89.

S.-Y. Kao, E.C. Ressner, J. Kates, and W.R. Bauer, Purification and Characterization of a Superhelix Binding Protein from Vaccinia Virus, *Virology* (in press).

SHEN, QUANG (b. 1948) Assistant Professor B.S. 1970 Burman University, Ph.D. 1974 Oregon State University. *Physical Chemistry*. Studies of Structure Conformation and Torsional Motion of Molecules by Electron Diffraction. Seventeen publications 1976-1980.

Q. Shen, An Electron Diffraction Study of the Molecular Structure of Gaseous Trimethylsilylvinyl ether, *J. Mol. Struct.*, *51*, 61 (1979).

SHEN, QUANG, cont'd

Q. Shen, The Molecular Structure and Conformation Composition of Gaseous Methyl Chloroformate as Determined by Electron Diffraction, Acta Chem. Scand. A., 32, 245 (1978).

Q. Shen, An Electron Diffraction Study of the Molecular Structure of 3-chloro-2-chloromethyl-1-propene, J. Mol. Struct., 53, 61 (1979).

O. Steinnes, Q. Shen and K. Hagen, Molecular Structure and Conformation of Gaseous Chloroacetyl chloride as Determined by Electron Diffraction, J. Mol. Struct., 64, 217 (1980).

Q. Shen and R.L. Hilderbrandt, The Structure of Methylsilatrane (1-methyl-2,8,9-trioxa-5-aza-1-silabicyclo (3.3.3) undecane) as Determined by Gas Phase Electron Diffraction, J. Mol. Struct., 64, 257 (1980).

SHERIDAN, PETER S. (b. 1944) Assistant Professor A.B. 1966 Kenyon College, Ph.D. 1971 Northwestern University. Inorganic Chemistry. Photochemistry of Transition Metal Complexes. Nine publications 1976-1980; one in press.

M. Rerek and P. Sheridan, Stereochemical Rearrangement in the Ligand Field Photolysis of Some Ru(III) Haloamine Complexes, Inorg. Chem., 19, 2646 (1980).

M.J. Saliby, P.S. Sheridan, and S.K. Madan, Substitution Reactions of Metallic Complexes of β, β', β"-Triaminotriethylamine. XI. Kinetics of the Stepwise Hydrolysis and Ligand Field Photolysis of the Difluoro (β, β', β",-Triaminotriethymine)chromium(III) Cation, Inorg. Chem., 19, 1291 (1980).

E. Martins, E. Kaplan*and P. Sheridan, The Ligand Field Photolysis of some 2,3,2-tet Complexes of Co(III) and Rh(III): Evidence of Stereochemical Control in d^6 Photochemistry, Inorg. Chem., 18, 2195 (1979).

M. Thompson* and P. Sheridan, The Ligand Field Photochemistry of cis-$[Cr(NH_3)_4Cl_2]^+$ and cis-α-$[Cr(trien)Cl_2]^+$, Inorg. Chem. 18, 1580 (1979).

W. Fordyce,* P. Sheridan, E. Zinato, P. Riccieri, and A.W. Adamson, The Preparation, Isomerization and Aquation of cis-$[Cr(trien)Cl_2]^+$, Inorg. Chem., 16, 1154 (1977).

THURNER, JOSEPH J. (b. 1920) Professor and Chairman B.S. 1949 Hartwick, M.A. 1951 Harvard. Inorganic Chemistry. Inorganic Trace Analysis and Inorganic Synthesis in Group IIIA; Error Analysis.

TRUMBULL, ELMER R. (b. 1924) Professor B.S. Dartmouth College 1944, Ph.D. 1947 University of Illinois. Organic Chemistry. Natural Products and Synthesis.

TRUMBULL, PATRICIA A. (b. 1930) Special Instructor in Chemistry A.B. Wellesley 1951, M.S. Massachusetts Institute of Technology 1953. Organic Chemistry.

THE COLORADO COLLEGE
Colorado Springs, CO 80903

Fall 1980 ug enrollment 1970
Degrees offered B.A.
Telephone (303) 473-2233 Ext. 301

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 8 . 2. Support staff, FTE's: Sec'y 1 Stockrm 2 Technical 1
3. 1980 seniors & their placement: Total 12 Grad. school 3 Industry 4 Professional schools 1 Other 4 .
4. Senior majors, average past five years: 12 .
5. Undergraduates involved in research, average past five years:
   Academic year 8 Summer 3
6. Master's program? no Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

Michael Zuzelski, Marshall Scholarship - 1978

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 10,000
2. Instrumentation:
   P-E R-12 NMR w/Variable Temp & Double Resonance
   P-E 457 IR
   Beckman DBG UV-Vis Spectrophotometer
   Beckman Liq. Scint. Counter
   Dionex Ion Chromatograph
   Sorvall RC5 Centrifuge
   Phillips X-ray Generator w/Weissenberg & Precession Camera
   P-E 900
   FOCI Spectrofluorometer Mark I
   Varian 275B AA Spectrophotometer
3. Library resources: CA? Yes Volume indices? Yes Collected indices? yes Total journal subscriptions? 45 Computer literature search service? Yes Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 21 .

4. Computer facilities:

   Burroughs 6800

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: 1)Approx. $2,500 for chemicals & glassware. 2) The Otis A. & Margaret T. Barnes Trust provides financial support for 10-14 full tuition scholarships for chem. majors, 2-4 summer u.g. research stipends for Barnes Scholars & an annual chemistry lecture. 3) Faculty research grants available.
2. Departmental grants: None.

3. Faculty teaching loads: Contact hours 15-20 Load credit for research? No

4. Sabbatical or leave support for research: Every 7th year faculty may apply for sabbatical leave of full salary for 5/9 yr. or 50% salary for full year.

FACULTY PROFILE

BOWER, NATHAN W. (b. 1951), Assistant Professor. B.S. 1973, College of Wooster, Ph.D., 1977, Oregon State University. Analytical Chemistry. Precision of instrumental methods, sampling for real analysis, atomic spectroscopy, archaeometric methods.

Seven publications, 1976-80.

N.W. Bower and J.D. Ingle, Jr., Precision of Flame Atomic Absorption Measurements of As, Cd, Ca, Cu, Fe, Mg, Mo, Na, and Zn, Anal. Chem., 49, 574 (1977).

N.W. Bower, J.J. Trunk, and J. Witt, Sample Size Selection for the Analysis of Pesticides in Tubers, J. Ag. & Food Chem., 25, 429 (1977).

N.W. Bower and J.D. Ingle, Jr., Precision of Flame Atomic Absorption Spectrometric Measurements of Al, Cr, Co, Eu, Pb, Mn, Ni, K, Se, Si, Ti and V, Anal. Chem., 51, 72 (1979).

N.W. Bower and J.D. Ingle, Jr., Optimization of Instrumental Variables in Flame Atomic Absorption Spectrometry, Anal. Chim. Acta, 105, 199 (1979).

N.W. Bower and J.D. Ingle, Jr., Noise Power Spectra of Flame Atomic Spectrometric Measurements, Spectrochim. Acta, 34B, 275 (1979).

CHAMPION, WILLIAM (b. 1930), Professor. B.S. 1952, University of Illinois, Ph.D. 1958, Cornell University. Organic Chemistry. Synthesis and Single crystal X-ray crystallography.

HITCHCOCK, ELDON T. (b. 1924), Professor and Chairman. B.S. Western Michigan University, 1946, Ph.D. 1961, University of Michigan. Analytical Chemistry. Electroanalytical techniques and separation of lanthanide and actinide elements.

HUEBERT, BARRY J. (b. 1945), Associate Professor. B.A. 1967, Occidental College, Ph.D. 1970, Northwestern University. Physical Chemistry. Sampling and analysis of acidic trace gases and aerosols in the remote and polluted troposphere. HNO_3 measurements, dry and wet depositon of atmospheric acidity.

Nine publications, 1976-80.

B.J. Huebert and A.L. Lazrus, Global Tropospheric Measurements of Nitric Acid Vapor and Particulate Nitrate, Geophys. Res. Letts., 5(7), 577 (1978).

B.J. Huebert and A.L. Lazrus, "Tropospheric Measurements of Nitric Acid Vapor and Particulate Nitrate," chapter in Nitrogenous Air Pollutants, Ann Arbor Science Publishers, 1979, Danniel Grossjean, Ed.

A.L. Lazrus, R.D. Cadle, B.W. Gandrud, J.P. Greenberg, B.J. Huebert, and W.I. Rose, Jr., Sulfur and Halogen Chemistry of the Stratosphere and of Volcanic Eruption Plumes, J. Geophys. Res., 84, 7869 (1979).

B.J. Huebert and A.L. Lazrus, Tropospheric Gas-Phase and Particualte Nitrate Measurements, J. Geophys. Res., 85, 7322 (1980).

B.J. Huebert and A.L. Lazrus, Bulk Composition of Aerosols in the Remote Troposphere, J. Geophys. Res., 85, 7337 (1980).

JONES, HAROLD L. (b. 1943), Associate Professor. B.S., Oregon State University, 1965, Ph.D., 1969, University of Colorado. Organic Chemistry. Small ring chemistry, organic photochemistry, nuclear magnetic resonance spectroscopy, and computer aided analysis and simulation of NMR spectra.

70

KESTER, KEITH B. (b. 1939), Associate Professor. B.A. 1961, Grinnell College, M.A. 1963, Harvard University, Ph.D., 1968, Harvard University. Inorganic Chemistry. Heterogeneous catalysis, radiofrequency chemistry reaction kinetics and gas chromatography.

G. Prada-silva, K. Kester, D. Loffler, R.L. Haller, J.B. Fenn, Recycling Molecular Beam Reactor, Rev. Sci. Instr., 48, 897 (1977).

MICHEL, LESTER A. (b. 1919), Professor. B.S. 1941, Taylor University, M.S., 1944, Purdue University, Ph.D., 1947, University of Colorado. Physical Chemistry. Calorimetry.

TABER, RICHARD L. (b. 1935), Professor. B.A. 1958, Colorado State College, Ph.D., 1963, University of New Mexico. Organic and Biochemistry. Bioorganic chemistry and enzymology.

R.L. Taber, A Biochemistry Course for Non-Science Majors, Biochemical Education, 5, 53 (1977).

CONCORDIA COLLEGE
Moorhead, MN 56560

Fall 1980 ug enrollment 2625
Degrees offered BA
Telephone (218) 299-3101

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 6.25. 2. Support staff, FTE's: Sec'y 0.42 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 13 Grad. school 0 Industry 3
Professional schools 3 Other 4 Unknown 3.
4. Senior majors, average past five years: 14.
5. Undergraduates involved in research, average past five years:
Academic year 2-3/yr Summer 1-2/yr Co-op 2-3/yr.
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

1976 - Julie Wiklund, NSF graduate fellowship

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 21,000
2. Instrumentation:

NMR; Varian EM-360A
GC; Aerograph A-90P
Beckman GC2
IR; Beckman IR-8, Acculab II
AA; Beckman Model 485
LSC; Beckman LS-100C
Magnetic susceptibility apparatus
UV-Visible; Beckman DBG
Polarograph Sargent Model 15;
Custom-built differential pulse polarograph
Custom built digital coulometer

3. Library resources: CA? part* Volume indices? part* Collected indices? no* Total journal subscriptions? 12 Computer literature search service? yes Separate chemistry or science library? no Librarian? no Standing orders for review series and annual reviews (past five years) 4.
*Available through Tri-College University.
4. Computer facilities:
Department: AIM-65 Microcomputer, Expanded KIM-1 Microcomputer, 2 Unexpanded KIM-1's. College: DEC PDP 11/34

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: About $1200/yr for chemicals and professional travel expenses.

2. Departmental grants: NSF ISEP, $6,900; Title VI, $7,250.

3. Faculty teaching loads: Contact hours 14 Load credit for research? none

4. Sabbatical or leave support for research: 90% of academic year salary for one semester after six years teaching and 60% of academic year salary for full year. Frequency averages seven years.

FACULTY PROFILE

DIERENFELDT, KARL E. (b. 1940) Associate Professor. B.S., 1962, South Dakota State University, Ph.D., 1966, University of California, Davis. Physical Chemistry. NMR Line Shifts and Broadening as a function of paramagnetic ion concentration. IR spectra of Venus to determine mean atmospheric pressure, temperature and atmospheric profile.

K. E. Dierenfeldt, U. Fink, and Harold P. Larson, "Temperature and Pressure Determinations in the Venus Atmosphere by Means of High-Resolution Spectra from 1 to 2.5μm," Icarus, 31, 11(1977).

DINGA, GUSTAV P. (b. 1922) Professor. B.A., 1947, St. Olaf College; M.S., 1949, University of Louisiville; Ph.D. 1962, University of Wyoming. Inorganic Chemistry. Zirconium dicarboxylates, hydrogen production by inorganic cycles.

HOMANN, H. ROBERT (b. 1937) Professor. B.S., 1959, Beloit College; Ph.D., 1964, Washington State University. Biochemistry. Biochemistry of hydrogen bacteria, chromatographic separation methods.

MACKELLAR, WILLIAM J. (b. 1935) Associate Professor and Chairman. B.A., 1965, Concordia College, Moorhead, MN, Ph.D., 1970, Wayne State University. Analytical Chemistry. Chemical instrumentation electroanalytical methods, methods development for water quality analyses.

W. J. MacKellar, R. S. Wiederanders*, D. E. Tallman, "Indirect Determination of Sulfate Ion by Spectrophotometric Titration of Excess Barium (II) Ion with Ethylenediaminetetraacetate," Anal. Chem., 50, 160(1978).

OSTERCAMP, DARYL L. (b. 1932) Professor. B.A., 1953, St. Olaf College, M.S., 1955, University of Wisconsin, Ph.D., 1959, University of Minnesota. Organic Chemistry. Synthesis of enemino compounds, spectroscopic properties of vinylogous systems.

*J. S. Docken, *E. C. Houkom, *R. A. Jorgenson, D. L. Ostercamp, *G. A. Tweed, and R. G. Werth, "Vinylogous Systems. 4. Mass Spectra of Vinylogous Ureas and Ureides," J. Org. Chem., 43, 505(1978).

WERTH, RICHARD G. (b. 1920) Professor. B.S. 1942, Wartburg College; M.S. 1948, Ph.D., 1950, University of Wisconsin. Organic Chemistry. Methods of Organic Synthesis; Mass Spectrometry; instrumental methods.

*J. S. Docken, *E. C. Houkom, *R. A. Jorgenson, D. L. Ostercamp, *G. A. Tweed, and R. G. Werth, "Vinylogous Systems. 4. Mass Spectra of Vinylogous Ureas and Ureides," J. Org. Chem., 43, 505(1978).

CORNELL COLLEGE
Mount Vernon, Iowa 52314

Fall 1980 ug enrollment 933
Degrees offered BA
Telephone (319) 895-8811

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 3.5. 2. Support staff, FTE's: Sec'y .5 Stockrm 1 Technical 1
3. 1980 seniors & their placement: Total 14 Grad. school 2 Industry 1 Professional schools 3 Other 8.
4. Senior majors, average past five years: 10.
5. Undergraduates involved in research, average past five years:
   Academic year 5 Summer 9
6. Master's program? No Master's degrees conferred, average past five years: ____
7. National honors, undergraduate or senior majors, past five years:

   Ms. Beth Heady, NSF-1980

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 21,600
2. Instrumentation:

   NMR (Varian T-60)
   X-ray (G.E. XRD-5 D/F)
   MS (Varian EM-600)
   UV-Vis (Beckman DV8; DK-2A; DU; DB)
   IR (Beckman IR-20A; IR-5)
   AA (Varian 1200)
   LSC (Beckman CPM-100)
   Mag. Susc. (Alpha 4200)
   GC (Bendix 2100; Wilkins A-90)
   Beckman Electroscan-30

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 23 Computer literature search service? No Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 23.

4. Computer facilities: Department: Cromemco System Three, terminal access (Hazeltine 1500; DEC Writer II, LA36) to PDP-11-70); Campus: IBM 1130 computer with online plotter.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Approximately $3,000/year for chemicals and glassware; $1,500/year for equipment.

2. Departmental grants:

   none

3. Faculty teaching loads: Contact hours 12 Load credit for research? No.

4. Sabbatical or leave support for research:

   Sabbatical at 50% salary full year or full salary for 1/2 year every seventh year.

FACULTY PROFILE

AULT, ADDISON (b. 1933) Professor. B.A., 1955, Amherst College; Ph.D., 1960, Harvard University. Organic Chemistry. Stereochemistry, nuclear magnetic resonance spectrometry, enzyme kinetics, phase transfer catalysis, laboratory experiments for undergraduate organic chemistry.

Six publications, 1976-1980.

A. Ault, A Handy and Systematic Catalog of NMR Spectra, University Science Books, 1980 (with Margaret Ault).

A. Ault, Techniques and Experiments for Organic Chemistry, 3rd edition, Allyn and Bacon, 1979.

A. Ault, Selectivity and Specificity in Organic Chemistry, J. Chem. Educ. 54 614 (1977).

A. Ault and G. O. Dudek, An Introduction to Proton Nuclear Magnetic Resonance Spectroscopy, Holden-Day, 1976.

A. Ault and *B. Wright, 2,2-Dichlorobicyclo[4.1.0]-heptane by Phase-Transfer Catalysis, J. Chem. Educ. 53 489 (1976).

DESKIN, WILLIAM A. (b. 1924) Professor. B.A. and B.S. in Ed., 1948, Northeast Missouri State University; M.A., 1950, University of Missouri; Ph.D., 1950, University of Iowa. Inorganic Chemistry, Analytical Chemistry. Transition metal complexes with sulfur containing ligands.

W. A. Deskin, *J. Worcester, *R. Cell, and *G. Lord, Formation Constants for Dithiooxalate Complexes, Proc. Iowa Acad. Sci., 82 156 (1976).

JORDAN, TRUMAN H. (b. 1937) Professor and Chairman. B.A., 1959, Albion College; M.A., 1962, Harvard University; Ph.D., 1964, Harvard University. Physical Chemistry. Inorganic chemistry and crystallography and their applications to dental chemistry.

T. H. Jordan, L. W. Schroeder, B. Dickens, and W. E. Brown, Crystal Structure of Stannous Hydroxide Phosphate, A Reaction Product of Stannous Fluoride and Apatite, Inorganic Chemistry, 15 1810 (1976).

M. Mathew, L. W. Schroeder, and T. H. Jordan, The Crystal Structure of Anhydrous Stannous Phosphate, $Sn_3(PO_4)_2$, Acta Cryst. B33, 1812 (1977).

*F. D. Babcock, *J. C. King, and T. H. Jordan, The Reaction of Stannous Fluoride and Hydroxyapatite, J. Dent. Res. 57, 933 (1978).

T. H. Jordan, B. Dickens, L. W. Schroeder, and W. E. Brown, Crystal Structure of Tritin (II) Hydroxide Oxide Phosphate, $Sn_3O(OH)PO_4$-, Inorg. Chem. 19, 2551 (1980).

Grants active 1977-1978: NIH \$25,894, The SnF_2-$Ca(OH)_2$-H_3PO_4-H_2O Reaction System; NIH \$16,941, Reactions of TiF_4 with Apatite.

ODOM, DANIEL G. (b. 1948) Assistant Professor. B.S., 1969, Tarleton State University; M.S., 1972, University of Houston; Ph.D., 1973, University of Houston. Biophysics. Synthesis of Biological Molecules under conditions approximating the primitive earth; chemical evolution; origin of life.

D. G. Odom, J. T. Brady, and J. Oro, The Prebiotic Synthesis of Oligonucleotides III. Acid Salt Reactions, J. Mol. Evol. 7 151 (1976).

D. G. Odom, N. Lahav, S. Chang, Prebiotic Nucleotide Oligomerization in a Fluctuating Environment: Effects of Kaolinite and Cyanamide, J. Mol. Evol. 12 259 (1979).

D. G. Odom, M. Rao, J. G. Lawless, J. Oro, Association of Nucleotides with Homoionic Clays, J. Mol. Evol. 12 365 (1979).

C. C. Peck, D. G. Odom, H. I. Freidman, P. W. Albro, J. R. Hass, J. T. Brady, D. A. Jess, Di-2-Ethylhexyl Phthalate (DEHP) and Mono-2-Ethylhexyl Phthalate (MEHP) Accumulation in Whole Blood and Red Cell Concentrates, Transfusion 19 137 (1979).

M. Rao, D. G. Odom, J. Oro, Clays in Prebiological Chemistry, J. Mol. Evol. 15 317 (1980).

Grants active 1979-1981: Research Corporation - Hewlett Foundation, $13,800; for 1980-1981: NSF 69A $15,297.

CREIGHTON UNIVERSITY

Omaha, NE 68178

Fall 1980 ug enrollment 3353

Degrees offered B.S., M.S.

Telephone (402) 449-2814

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 9 . 2. Support staff, FTE's: Sec'y 1 Stockrm 1 Technical 0
3. 1980 seniors & their placement: Total 55 Grad. school 9 Industry 9 Professional schools 36 Other 1 .
4. Senior majors, average past five years: 40 .
5. Undergraduates involved in research, average past five years:
   Academic year 15 Summer 3
6. Master's program? Yes Master's degrees conferred, average past five years: 4
7. National honors, undergraduate or senior majors, past five years:

   None.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 21,000
2. Instrumentation:

   Gouy magnetic susceptibility balance (Alpha 6000)
   IR (PE 621)
   AA (PE 370)
   ur-vis-near IR (Cary 14)
   NMR (Varian T60)
   GC (Beckman 72-5)
   GC (HP5750)
   Polarograph system (Heath EUA-19)
   x-y recorder (Houston Omni. 2000)
   Universal Instrument (MP-1000)

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 50 Computer literature search service? Yes Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 10 .

4. Computer facilities: Department: Microcomputers EL-MMD-1, Commodore Kim-1, Apple II; Campus: Univac 1150 access through time shared terminals, two located in department.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   About $4,000 for supplies and $7,500 for equipment.

2. Departmental grants:

   None.

3. Faculty teaching loads: Contact hours 9 hrs. Load credit for research? No

4. Sabbatical or leave support for research:

   Sabbatical leave program about every 10 years, one semester at full salary, or academic year at half salary. Seven summer reserach fellowships for the entire university are competitively awarded.

FACULTY PROFILE

DAVIES, MARCIA CORDES (1938) Associate Professor. B.A., 1961 Duchesne College, Ph.D., 1966, University of Notre Dame. Inorganic Chemistry. Characterization of Coordination Compounds by Physical Methods. On research sabbatical leave, 1980-81, with Professor Adrian George, University of Nebraska at Lincoln.

KLEIN, FRANCIS M. (1941) Associate Professor, B.S., 1963, King's College, Ph.D., 1976, University of Notre Dame. Physical Organic Chemistry. Mechanistic Organic Photochemistry, Computer Modeling of Chemical Reactions. On research sabbatical leave, 1981-82.

MATTSON, BRUCE M. (1951) Assistant Professor, B.A., 1973, Southwest State University, Ph.D., 1977, University of Minnesota. Inorganic Chemistry. Inorganic and Organometallic Photochemistry.

Ten publications, 1976-80.

B. Mattson and W. A. G. Graham, "Mechanism of Halide Abstraction from $(\eta^5\text{-}C_5H_5)Fe(CO)_2I$ with $AgBF_4$", J. Inorg. Chem., accepted for publication, 20 (March, 1981).

*A. Mueting and B. Mattson, "Kinetics and Thermodynamics of the Intramolecular Isomerization of $[Fe(SCH_3)(CO)_3]_2$", J. Inorg. Nucl. Chem., accepted for publication, 43 (January, 1981).

R. Snipp, B. Mattson, and *W Hardy, "Spectacular Gas Density Demonstration Using Methane Bubbles", J. Chem. Educ., accepted for publication, 58 (January, 1981).

B. Mattson, "Hg Vapor Lamp from Streetlight", J. Chem. Educ., 56, 542 (1979).

S. Wheeler, B. Mattson, G. Miessler, and L. Pignolet, "Electrochemical and Chemical Properties of Dithiocarbamato Complexes of Ruthenium (II), (III), and (IV)", Inorg. Chem., 17, 340 (1978).

Research Corporation Cottrell Grant, 1979-81, $4,800., Photochemistry of Organometallic and Coordination Compounds of the Iron Triad.

SHEARER, GREG OTIS (1947) Assistant Professor. B.S., 1969, Iowa State University, M.S., 1971, Creighton University, Ph.D., 1976, University of Kansas. Physical Organic Chemistry. Mechanisms of Organic and Biochemical Reactions.

R. P. Hanzlik and G. O. Shearer, "Secondary Deuterium Isotope Effects on Olefin Epoxidation by Cytochrome P-450", Biochem. Pharmacol., 27, 1441 (1978).

R. P. Hanzlik, G. O. Shearer, A. Hamburg, and T. Gillisse, "Metabolism in Vitro of Para-Substituted Styrenes. Kinetic Observations of Substituent Effects", Biochem. Pharmacol., 27, 1435 (1978).

Creighton University Summer Research Grant, 1981, $3,000., Secondary Deuterium Isotope Effects Study of Peroxyacid Eopoxidation of Alkyl Substituted Olefins.

SNIPP, ROBERT L. (1936) Associate Professor. B.S., 1958, Creighton University, M.S., 1960, Creighton University, Ph.D., 1965, University of Iowa. Physical Chemistry. Physical Chemistry of Macro-molecules.

R. Snipp, B. Mattson, and *W. Hardy, "Spectacular Gas Density Demonstration Using Methane Bubbles", J. Chem. Educ., accepted for publication, 58 (January, 1981).

SOLSKY, JOSEPH F. (1949) Assistant Professor. B.A., 1971, State University of New York at Buffalo, Ph.D., 1977, State University of New York at Buffalo. Analytical Chemistry. Stationary Phases and Separations Techniques in Gas Chromatography.

TAKEMURA, K. H. (1921) Professor of Chemistry. B.S., 1947, University of California - Los Angeles, M.S., 1948, University of Illinois - Urbana, Ph.D., 1950, University of Illinois, Urbana. Organic Chemistry, Reaction Mechanism and Synthesis.

W. G. Dauben, C. R. Kessel, and K. H. Takemura, "Simple, Efficient Total Synthesis of Cantharidin High-Pressure Diels-Alder Reaction", J. Amer. Chem. Soc., 102, 6893 (1980).

ZEBOLSKY, DONALD M. (1933) Associate Professor and Chairman. B.A., 1956, Northwestern University, Ph.D., 1963, Kansas State University. Physical Chemistry, Modeling Ion Pairs and Complexes in Solution.

H. L. Friedman and D. M. Zebolsky, "Calculated x-ray Scattering Functions for Aqueous Ph_4AsCl Which Fit the Osmotic Coefficient Data", J. of Solution Chemistry, 5, 835-865 (1976).

Creighton University Summer Research Grant, 1981, $3,200., Study of Thermodynamics of Aqueous Electrolyte and Protosurfactant Solutions.

GROSS, STANLEY (1931) Instructor. B.S., 1956, Creighton University, M.S., 1958, Creighton University. Analytical Chemistry. Unique Methods of Classical Analysis.

UNIVERSITY OF DALLAS

Irving TX 75061

Fall 1980 ug enrollment 1150

Degrees offered BA, BS

Telephone (214) 579-5377

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 3.5. 2. Support staff, FTE's: Sec'y 0.5 Stockrm 0 Technical 0.25
3. 1980 seniors & their placement: Total 5 Grad. school 1 Industry 2 Professional schools 2 Other ______.
4. Senior majors, average past five years: 8.
5. Undergraduates involved in research, average past five years: Academic year 0.2 Summer 3
6. Master's program? no Master's degrees conferred, average past five years: n/a
7. National honors, undergraduate or senior majors, past five years: none

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 4250
2. Instrumentation:
   - NMR (Jeol C-60 HL)
   - GC (B GC-65)
   - IR (B IR-33)
   - A A (B 485)
   - UV-Visible (B DB-6)
   - Polarograph (SW Modell III)
   - pH Meters (Corning M-109)
   - Conductivity Bridges (YS M-31)
3. Library resources: CA? yes Volume indices? yes Collected indices? no Total journal subscriptions? ____ Computer literature search service? no Separate chemistry or science library? no Librarian? no Standing orders for review series and annual reviews (past five years) ______.
4. Computer facilities: Department; Z-80 based grpahics system, 1 CRT terminal Campus; 6 CRT terminals, 2 DEC LA-36 Decwriter II, HP-3000 time-sharing

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: $17,000 for summer research, supplies, and travel
2. Departmental grants: none
3. Faculty teaching loads: Contact hours 8 Load credit for research? no
4. Sabbatical or leave support for research: Full salary for one semester, one-half salary for an academic year, after every seven years of full-time service.

FACULTY PROFILE

HENDRICKSON, WILLIAM H. JR. (b. 1948) Assistant Professor. B.S., 1970, Louisiana Tech University, Ph.D., 1974, Louisiana State University. *Organic Chemistry*. Chemiluminescence, mechanism of peroxide-nucleophile reactions.

E.H. White, N. Suzuki and W.H. Hendrickson, Jr., "3,3,7,7-Bis-(10'-Methyl-9', 9'-Acridanyl)-1,2,5,6-Tetraoxocane, A Dioxetane Dimer, from the Reaction of 10-Methyl-9-Methylene-9,10-Acridane with Singlet Oxygen", *Chem. Lett.*, 1491 (1979).

W.H. Hendrickson, Jr., J. Healy and I. Summerlin, "Laboratory Manual for Chemistry for the Life Sciences", Random House, 1980.

EAKER, CHARLES W. (b. 1949) Assistant Professor. B.S., 1971, Michigan State University, Ph.D. 1974, University of Chicago. *Physical Chemistry*. Semiempirical calculations of potential energy surfaces and reaction dynamics of simple chemical systems.

Charles W. Eaker and Lee R. Allard*, "Generalized DIM Potential Energy Surfaces for H_3 and H_4", accepted for publication in *J. Chem. Phys.*, 1980.

Charles W. Eaker, "Hermitian Formulation of DIM Theory", *J. Chem. Phys.* *69*, 1453 (1978).

Charles W. Eaker and Christopher A. Parr, "Optimization of Diatomic State Mixing in DIM Theory: The CH_n Potential Energy Surfaces", *J. Chem. Phys.* *64*, 1322 (1976).

Charles W. Eaker and Christopher A. Parr, "Optimized DIM Potential Energies for H_3 and H_4", *J. Chem. Phys.* *65*, 5155 (1976).

Grant active 1978-80: Petroleum Research Fund, $12,800, A Theoretical Study of Chemiluminescence.

SMITH, JAMES P. (b. 1936) Adjunct Professor. B.S., 1962, North Texas State University, Ph.D., 1965, Texas Technological College, M.B.A. 1973, Southern Methodist University. *Analytical/Inorganic Chemistry*. Electron Beam Methods of Analysis, spectroscopic analysis of semiconductors, thermal properties of metal amine complexes, chemical education, technical problems in organizations.

TOWNE, JACK C. (b. 1927) Professor & Chairman. B.S. 1950 UCLA; Ph.D. 1955 Univer. of Wisconsin, Madison. *Biochemistry*. Intremediary Metabolism; Biochemical Methodology; Enzymes and Radiochemical Methods.

DAVIDSON COLLEGE
Davidson, North Carolina 28036

Fall 1980 ug enrollment 1300
Degrees offered B.S.
Telephone (704)892-2000

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 7 . 2. Support staff, FTE's: Sec'y 3/4 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 10 Grad. school 6 Industry 1
Professional schools 2 Other 1 .
4. Senior majors, average past five years: 12 .
5. Undergraduates involved in research, average past five years:
Academic year 10 Summer 3
6. Master's program? No Master's degrees conferred, average past five years. N/A
7. National honors, undergraduate or senior majors, past five years:

None.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 23,000
2. Instrumentation:

NMR-60 MHz (Varian EM-360)
UV-VIS - (Varian - Cary 14, Beckman DB)
IR - (PE 283, 710, 700)
GC - (H-P 5710A (2), Varian 90P)
AA - (P-E 303)

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 33 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 15 .

4. Computer facilities: Department: H-P 9820A, Decwriter terminal, Apple II, line to NCECS
Campus: PDP-8 with 8 terminals, NCR Century 101

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
About $3,000/year for chemicals, glassware
About $1,500/year for equipment
2. Departmental grants:

DuPont $7,000

3. Faculty teaching loads: Contact hours 15 Load credit for research? None .

4. Sabbatical or leave support for research:

After every six years, a one term sabbatical at full salary, 2 terms at 2/3 salary or 3 terms at 1/2 salary.

FACULTY PROFILE

BRYAN, H. ALDEN (b. 1928) Professor. A.B., 1950, King College, Ph.D., 1955 University of Tennessee. *Analytical and Inorganic Chemistry*. Synthesis and separation of platinum complexes.

BURNETT, J. NICHOLAS (b. 1939) Professor and Chairman. A.B., 1961, Emory University, M.S., 1963, Emory University, Ph.D., 1965, Emory University. *Analytical Chemistry*. Electrochemistry of organic and biological compounds.

R. W. Wightman, J. R. Cockrell, R. W. Murray, J. N. Burnett and *S. B. Jones, "Protonation Kinetics and Mechanism for 1,8-Dihydroxy-anthraquinone and Anthraquinone Anion Radicals in Dimethylformamide Solvent," *J.Am.Chem.Soc.*, *98*, 2562(1976).

CARROLL, FELIX A. (b. 1947) Associate Professor. B.S., 1969, University of North Carolina at Chapel Hill, Ph.D., 1973, California Institute of Technology. *Organic Chemistry*. Photochemistry, phase transfer catalysis, synthesis of pheromones.

Eight publications, 1976-1980.

F. A. Carroll and F. H. Quina, "A New Method for the Determination of Intersystem Crossing Quantum Yields. Application to Benzene and its Methyl Derivatives," *J. Chem. Soc.* *98*, 1 (1976).

F. A. Carroll, F. H. Quina, D. Möbius, F. R. Hopf and D. G. Whitten, "Photochemical Reactions in Organized Monolayer Assemblies II. Excimer Formation and Reaction in the Solid State and in Organized Monolayer Assemblies," *Z. Phys. Chem. (Frankfurt am Main)*, *101*, 151 (1976).

F. A. Carroll, F. H. Quina and Z. Hamlet, "Bimolecular Decay Routes in the Singlet Quenching of Naphthalenes by Chloroacetonitrile," *J. Amer. Chem. Soc.*, *99*, 2240 (1977).

F. A. Carroll, "Some Applications and Limitations of Heavy Atom Methods for the Determination of Photochemical Reaction Multiplicity," *Mol. Photochem*. *8*, 133 (1977).

F. A. Carroll, *D. W. Boldridge, *J. T. Lee, *R. R. Martin, *M. J. Turner and *T. L. Venable, "Synthesis and Field Tests of Analogs of the Housefly Pheromone (*Z*)-9-Tricosene," *J. Agr. Food Chem.* *28*, 343 (1980).

DESIENO, ROBERT P. (b. 1933) Professor. B.S. 1955, Union College, M.S., 1962, Union College, Ph.D., 1966, University of California, Davis. *Physical Chemistry*. Spectroscopy of exploding wires, applications of the computer.

R. P. DeSieno, "Notes of a Reluctant Chemist," *J. College Science Teaching*, *3*, 159 (1978).

FREDERICKSEN, JAMES MONROE (b. 1919) Professor. B.S., 1940, University of Richmond, Ph.D., 1947, University of Virginia. *Organic Chemistry*. Medicinal chemistry.

GABLE, RALPH WILLIAM (b. 1929) Associate Professor. B.S., 1950 University of Texas, M.A., 1953, Duke University, Ph.D., 1956, Duke University, *Physical Chemistry*. Water and ion exchange resins.

R. W. Gable, "Encyclopaedia Britannica: A Neglected Phlogistonist 'Textbook'," *J. Chem. Ed.*, *56*, 375-6 (1979).

R. W. Gable, "The Chemistry Lab as a Search for Pattern," *Chemistry in the Two-Year College*, *19*, pp 69-71 (1979).

R. W. Gable and C. F. Baes, Jr., "Derivation of Relationship for Effects of Pressure on the Solubility of NaCl," an appendix to "Effects of Temperature, GABLE, RALPH W., cont'd

Temperature Gradients, Stress and Irradiaiton of Migration of Brine Inclusions in a Salt Repository," by G. H. Jenks *ORNL-5226*, pp 55-58. July 1979.

NUTT, WILLIAM RODGER (b. 1943) Associate Professor. B.A., 1965 Ohio Wesleyan University, M.A., 1969, Duke University, Ph.D., 1971, Duke University. *Inorganic and Physical Chemistry*. Synthesis and characterization of gallium-nitrogen compounds.

SCHUH, MERLYN D. (b. 1945) Associate Professor. B.A., 1967, University of South Dakota, Ph.D., 1971, Indiana University. *Physical and Biochemistry*. Gas Phase photochemistry and globular proteins in solution.

Alberto M. Garcia, W. R. Ware, C. S. Parmenter, K. Y. Tong and M. D. Schuh, "New SVL Lifetimes and Quantum Yields in Benzene Vapor: A Comparison of Experimental and Theoretical Radiative Transition Probabilities," *Chem. Phys.*, *17*, 377 (1976).

M. D. Schuh, "Search for Steric Hindrance to Quenching of Triplet State Alkalbenzene Vapors by *cis*-Piperylene and Biacetyl," *J. Phys. Chem.*, *82*, 1861 (1978).

Grant activity 1979-80: Petroleum Research Fund, Type B, $13,000, "Vapor Phase Triplet Studies."

National Science Foundation, $25,000, "Vapor Phase Photochemistry: Decay of Triplet State Acetaldehyde and Quenching of Triplet States by O_2 and NO."

UNIVERSITY OF DAYTON
Dayton, Ohio 45469

Fall 1980 ug enrollment 6666
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Telephone (513)229-2631

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 9 . 2. Support staff, FTE's: Sec'y 1 Stockrm 2 Technical 1
3. 1980 seniors & their placement: Total 18 Grad. school 2 Industry 12 Professional schools 0 Other 4 .
4. Senior majors, average past five years: 18 .
5. Undergraduates involved in research, average past five years:
   Academic year 5 Summer 3
6. Master's program? yes Master's degrees conferred, average past five years: 4-5
7. National honors, undergraduate or senior majors, past five years:

   None.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 29,841
2. Instrumentation:
   NMR (P-E R24, Varian A60-D)
   IR (P-E 283, 197, 710B)
   G.C. (Varian 1200, Carle 8000, Gow Mac 69-150)
   AA (P-E 360)
   U.V.-VIS (P-E 124, Beckman DB)
   Polarograph (PAR 174A)
   MS (Bendix TOF)
   P-E Ultek Ultrahigh Vacuum System (MX-14)
   Vac. Atmos. Dry Box (HE 43-2)
   Debye-Scherrer Powder Camera
3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 88 Computer literature search service? yes Separate chemistry or science library? no Librarian? DNA Standing orders for review series and annual reviews (past five years) 22 .
4. Computer facilities: TRS-80 (Departmental)
   Univac 90/80-3 (University); Access via departmental terminal

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   approximately $4000 per year for travel, and consumable supplies.
2. Departmental grants: None.
3. Faculty teaching loads: Contact hours 6-12 Load credit for research? No .
4. Sabbatical or leave support for research:
   Eligibility after 6 years; one-half academic year salary available for up to 12 months.

FACULTY PROFILE

EVESLAGE, SYLVESTER L. (b. 1923) Professor, B.S. 1944, Notre Dame, M.S. 1945, Notre Dame, Ph.D. 1953, Notre Dame, Organic and Clinical Chemistry. Evaluation of the Glycosylated Hemoglobin by a Microchromatographic Method.

W. W. Spencer, J. Desmet, S. Eveslage, Clinical Chemistry, 25, 1132 (1979).

FOX, B. LAWRENCE (b. 1940) Professor and Chairman, B.S., 1962, John Carroll University, Ph.D., 1966, The Ohio State University, Organic Chemistry. 7 publications 1976-1980.

*K. Fairlie and B. L. Fox,"Rapid Quantitative Determination of Tetrahydrocannabinol in Marihuana by Gas Chromatography", J. of Chromatographic Science, 14, 334 (1976).

B. Larsen, B. L. Fox, M. F. Burke, V. J. Hruby, "The Separation of Peptide Hormone Diastereomers by Reverse Phase High Pressure Liquid Chromatography. Factors Affecting Separation of Oxytocin and its Diastereomers - Structural Information", Internat. J. of Peptide and Protein Res., 13, 12 (1979)

N. L. Hecht, D.S. Duvall, and B. L. Fox, "Investigation of Advanced Thermal-Chemical Concepts for Obtaining Improved MSW-Derived Products", EPA-600/7-78-143, Aug. 1978.

N. L. Hecht, B. L. Fox, D. S. Duvall, and A. A. Ghazee, "Technology for Powdered Fuel Preparation", Proceedings for the Engineering Foundation Conference on Resource Recovery, Chapter 10, Ann Arbor Science Publishers, in Press.

N. L. Hecht, D. S. Duvall, A. A. Ghazee, and B. L. Fox*, "Obtaining Improved Products from the Organic Fraction of Municipal Solid Waste", EPA 600/2-80-121, Aug. 1980.

FRATINI, ALBERT V. (b. 1939) Associate Professor, B.S., 1960, University of Rhode Island, Ph.D., 1965, Yale University, Physical Chemistry.

H. Rosenberg, T. Tsai, W. W. Adams, M. T. Gehatia, A. V. Fratini and D. R. Wiff, "The Synthesis and Structure of a Dispirotetrasilazane," J. Am. Chem. Soc., 98, 8083 (1976).

W. W. Adams, A. V. Fratini, and D. R. Wiff, "N,N'-Dibenzoyl-p-phenylenediamine," Acta Cryst., B34, 954 (1978).

*B. N. Meyer, J. N. Ishley, A. V. Fratini and H. C. Knachel, "Addition Compounds of Phosphorus(V) Chloride and Aromatic Nitrogen Bases. Crystal Structure and ^{1}H NMR and Raman Spectra of Pyzrazine-Phosphorus(V) Chloride", Inorg. Chem., 19, 2324 (1980).

M. Wellman, W. Adams, *R. A. Wolff, *D. Dudis, D. Wiff, and A. V. Fratini, "Model Compounds For Rigid-Rod Aromatic Heterocyclic Polymers: 1. The X-Ray Structures of 2,6-Diphenylbenzo 1,2-d: 5,4-d' Bisthiazole," Macromolecules, in press.

KEIL, ROBERT G. (b. 1941) Associate Professor, B.S., 1963, Villanova University, Ph.D., 1967, Temple University, Philadelphia, Physical Chemistry. Anodization of Vanadium in Acetic Acid Solutions.

R. Keil, T. Graham, and K. Roenker,"Inelastic Electron Tunneling Spectroscopy: A Review of an Emerging Analytical Technique", Applied Spectroscopy, 30, 1 (1976).

R. Keil, T. Wittberg, J. Hoenigman, and R. McDonald,"An AES, XPS and SEM Study of The Chemistry of Passivated Lithium Films in $SOCl_2$ Cells", Journal of the Electrochemical Society, accepted, July 1980, in press.

KEIL, ROBERT G., cont'd

J. Hoenigman, R. Keil, T. Wittberg, and J. Peters, "Characterization of Passivation Films on Lithium Anodes", Proceedings of Eighth International Vacuum Congress, Cannes, France, 2, 494 (1980).

Grant active: Monsanto Chemical Contract, 1980-81, $20,000.

KNACHEL, HOWARD C. (b. 1940) Associate Professor, B.S. 1963, University of Dayton, M.S., 1969, Ohio State, Ph.D., 1971, The Ohio State University, Inorganic Chemistry, Nonmetal Inorganic Chemistry, Nature of Phosphorus(V) Chloride in Ionizing Solvents and in the Solid State.

*B. N. Meyer, J. N. Ishley, A. V. Fratini, H. C. Knachel, "Addition Compounds of Phosphorus(V) Chloride and Aromatic Nitrogen Bases. Crystal Structure and ^1H NMR and Raman Spectra of Pyrazine-Phosphorus(V) Chloride, Inorg. Chem., 19, 2324 (1980).

Grant active: Research Corporation, 1979-80, $6,200.

LUCIER, JOHN J., S.M. (b. 1917) Professor, B.S., 1937, University of Dayton, M.S., 1950, Western Reserve University, Ph.D., 1951, Western Reserve University, Organic Chemistry.

MICHAELIS, CARL I. (b. 1918) Professor, B.A., 1945, University of Kansas, M.A., 1947, University of Kansas, Ph.D., 1953, University of Florida, Organic Chemistry.

SINGER, SANFORD S. (b. 1940) Associate Professor, B.S., 1962, Brooklyn College, Ph.D., 1967, University of Michigan, Biochemistry. Basis for glucocorticoid actions; properties, control, and biological implications of steroid sulfotransferases. Sixteen publications, 1976-1980.

*M. Federspiel and S. S. Singer, "Properties of Glucocorticoid Sulfotransferase Activity of Heifer Liver", Ohio Journal of Science, 80, 41 (1980).

S. S. Singer, *A. Lee, A. Moshtaghie, and T. Kutzer, "Enzymatic Sulfation of Steroids: 10", Biochemical Pharmacology, in press.

S. S. Singer, T. Kutzer, and *A. Lee, "Enzymatic Sulfation of Steroids: 8. Control of Hepatic Cortisol Sulfation and Glucocorticoid Sulfotranferases of Rats by the Pituitary", Endocrinology, 104, 571 (1979).

S. S. Singer, "Enzymatic Sulfation of Steroids: 6. A Simple Rapid Method for Routine Enzymatic Preparation of 3'-Phosphoadenosine-5'-Phosphosulfate". Analyt. Biochem., 96, 34 (1979).

S. S. Singer, E. Hess, S. Sylvester, "Hepatic Cortisol Sulfotransferase Activity in Several Types of Experimental Hypertension in Male Rats", Biochem. Pharmacol., 26, 1033 (1977).

Grant active: NIH, 1979-80, $39,000.

STANISLAWSKI, DAVID A (b. 1950) Assistant Professor, B.S., 1972, Xavier University, Ph.D., 1978, University of Wisconsin, Inorganic Chemistry, Silicon Chemistry. Six publications, 1976-1980.

R. T. Oakley, D. A. Stanislawski, R. West, "Cyclic Polysilanes. XIII. Ring Closure Reactions of - Dichloropermethylpolysilanes; the Preparation of Heterocyclic Phenylphosphapermethylsilanes $(PhP)_m(SiMe_2)_n$", J. Organometal. Chem., 157, 389-404 (1978).

STANISLAWSKI, DAVID A., cont'd

D. A. Stanislawski, A. C. Buchanan III, and R. West, Nuclear Magnetic Resonance and Electron Spin Resonance Observation of Hindered Rotation in sym-Tetra-tert-butyl-disilane and the Corresponding Disilanyl Radical", J. Amer. Chem. Soc., 100, 7791-7794 (1978).

D. A. Stanislawski, J. R. Van Wazer, "Determination of Phosphorus Compounds by Phosphorus-31 Fourier-Transform Nuclear Magnetic Resonance Spectrometry", Anal. Chem., 52, 96-101 (1980).

D. A. Stanislawski, R. West, "^{29}Si and ^{13}C Spectra of Permethylpolysilanes", J. Organometal. Chem., in press.

D. A. Stanislawski, R. West, "^{29}Si and ^{13}C NMR Spectra of Chloro- and Fluorosubstituted Linear Permethylpolysilanes", J. Organometal. Chem., in press.

DENISON UNIVERSITY
Granville, OH 43023

Fall 1980 ug enrollment 2130
Degrees offered BA, BS
Telephone (614) 587-0810

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5 . 2. Support staff, FTE's: Sec'y .75 Stockrm 1.3 Technical 0
3. 1980 seniors & their placement: Total 11 Grad. school 2 Industry 4 Professional schools 5 Other .
4. Senior majors, average past five years: 15 .
5. Undergraduates involved in research, average past five years:
   Academic year 4 Summer 2
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 23,000
2. Instrumentation:

   NMR-(Varian T-60)
   UV-VIS (Cary 118, Beckman DU, P-E 55B)
   IR (Beckman IR-20A & IR-33)
   GC (H-P 5700A)(H-P 5880A)
   Polarimeter (Rudolph Model 63)
   Electrophoresis (Savant FP-22A)
   Polarograph (PAR 174A)
   Atomic Absorption (P-E 560)
   X-Ray diffraction (Picker 6147)

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 21 Computer literature search service? No Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 14 .

4. Computer facilities: DEC VAX 11/780 timesharing system for the campus
   Six terminals in chemistry:
   3 VT-100 CRT terminals
   2 Digilog CRT terminals
   One DEC LA-36 Decwriter equipped with Electronome monitors for classroom use.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   Approx. $2,000/year for chemicals and project grants.

2. Departmental grants:
   NSF-ISEP -- 1979-81, Instrumentation for Electrochemistry and AA.

3. Faculty teaching loads: Contact hours 12-13 Load credit for research? No

4. Sabbatical or leave support for research:
   Sabbatical every seven years at 1/2 salary for full year or full salary for 1/2 year. Faculty Development program support for summer research.

FACULTY PROFILE

BROWN, JOHN B. (b. 1924) Professor. B.S., 1948, University of Kentucky, Ph.D., 1956, Northwestern University. *Physical Chemistry*. Properties of micellar solutions, solubilization by cationic detergents, micellar catalysis, computers in general education.

DOYLE, RICHARD R. (b. 1937) Associate Professor. B.S., 1960, Drexel Institute of Technology, M.S. 1963, Ph.D. 1965, University of Michigan, *Organic and Biological Chemistry*. Amino Acid Synthesis, Mushroom Chemistry.

EVANS, THOMAS A. (b. 1942) Professor and Chairman. A.B., 1964, Grinnell College, Ph.D., 1968, Michigan State University, *Organic Chemistry*. Ferrocene chemistry and biochemistry, porphyrin chemistry, steric effects in organic reactions.

Thomas A. Evans, "The impact of Chemical Science: Do Our Students Understand It?" *J. Chem. Educ.*, *54*, 304 (1977).

Jonathan Lowrey*, Thomas A. Evans, and Shan S. Wong, Stereospecificity of NAD^+/NADH Transformation, *J. Chem. Educ.*, *58*, (1981) in press.

GALLOWAY, GORDON L. (b. 1936) Professor. B.S., 1957, Franklin and Marshall College, Ph.D., 1962, Michigan State University. *Inorganic Chemistry*. The chemistry of 8-methoxypsoralen; educational uses of the computer.

G. L. Galloway, "What Business Has a Chemist Teaching "Science and Human Values'?", *J. Chem. Educ.*, *54*, 84 (1977).

G. L. Galloway, "Who, Me Teach Human Values?", *Chemtech*, *Vol. VII* (no. 12), 725 (1977).

GILBERT, GEORGE L. (b. 1933) Professor. B.S., 1958, Antioch College, Ph.D., 1963, Michigan State University. *Inorganic Chemistry*. Synthesis and Characterization of Coordination Compounds of Pt.(II), Zn, Ni and Co; separation of anionic species via cation exchange columns; demonstrations in teaching chemistry.

G. L. Gilbert, "How Do I Get The Answer?", *J. Chem. Educ.*, *57*, 79 (1980).

HOFFMAN, WILLIAM A., JR. (b. 1928) Professor. B.S., 1950 Missouri Valley College, M.S., 1952, Ph.D., 1955, Purdue University. Analytical and Inorganic Chemistry. Solution chemistry, coordination compounds, natural waters.

W. A. Hoffman, "A Compact, Variable Volume Liquid/Liquid Extractor", Anal. Chem., 50, 2158 (1978).

W. A. Hoffman, S. E. Lindberg, R. R. Turner, "Precipitation Acidity: The Role of the Forest Canopy in Acid Exchange", J. Environ. Quality, 9, 95 (1980).

W. A. Hoffman, S. E. Lindberg, R. R. Turner, "Observations of Organic Constituents in Rain", Environ. Sci. & Technology, 14, 999 (1980).

Grant 1979-81: ISEP, $9,600, Instrumentation in Electrochemistry and AA.

Grant 1980-81: NSF 69A $13,450, Gas chromatographic instrumentation to identify trace organics.

SPESSARD, DWIGHT R. (b. 1919) Wickenden Professor of Chemistry. B.S., 1941, Otterbein College, Ph.D., 1944, Western Reserve University. Organic Chemistry. Organo-phosphorus chemistry.

DE PAUL UNIVERSITY

Chicago, IL 60614

Fall 1980 ug enrollment 8,455

Degrees offered BA, BS & MS

Telephone (312) 321-8184

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 10 . 2. Support staff, FTE's: Sec'y 1 Stockrm 1 Technical 3.5
3. 1980 seniors & their placement: Total 10 Grad. school 6 Industry 4 Professional schools 0 Other 0 .
4. Senior majors, average past five years: 12 .
5. Undergraduates involved in research, average past five years: Academic year 12 Summer 6
6. Master's program? ____ Master's degrees conferred, average past five years: 5
7. National honors, undergraduate or senior majors, past five years:
   1977 Frank A. Baiocchi, NSF Graduate Fellowship

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 12,644
2. Instrumentation:

   NMR--EM360A
   IR--Beckman-34 & DK1
   MS--PE-270B, HP-5930
   AA--JA-500
   HPLC--Waters-440
   Polarograph--PAR-364, SMD-303
   9--GC-Varian & Carl
   5--B&L Spec 20
   Conductivity Bridge YSI-31
   Polarimeter-Rudolph

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 56 Computer literature search service? Yes Separate chemistry or science library? No Librarian? Yes Standing orders for review series and annual reviews (past five years) 25 .
4. Computer facilities:

   HP
   Northstar 48K, 2 mini floppy disks, Diablo
   Wang

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   About $8,000/yr for chemicals, projects, travel and instrument repair.

2. Departmental grants: No.
3. Faculty teaching loads: Contact hours 12 Load credit for research? Yes
4. Sabbatical or leave support for research: No.

FACULTY PROFILE

ANYSAS, JURGIS A. (b. 1934) Associate Professor and Chairman. B.A. Sc., 1956, University of Toronto, Ph. D., 1966, Illinois Institute of Technology. Quantum Chemistry and Spectroscopy. Spectra and electronic states of inorganic complexes; conformational energies and structure of cyclic compounds.

BLUMBERG, AVROM A. (b. 1928) Professor. B.S., 1949, Rensselaer Polytechnic Institute, Ph. D., 1953, Yale University. Physical and Polymer Chemistry. Physical properties of polymers, transport through films and membranes, kinetics, mathematical modeling.

A. A. Blumberg and E. R. Niemira, "Transitions and the relaxation spectrograph: Poly(oxymethylene)", J. Polymer Science (Polymer Physics Edition) 17, 1891(1979).

BREITBEIL, III, FRED W. (b. 1931) Professor. B.S., 1953, Xavier University, M.S., 1957, Xavier University, Ph. D., 1960, University of Cincinnati. Organic Chemistry. Chemical and physical properties of cyclic vinylene carbonates, carbonyl-oxygen and silicon-siloxy interactions, synthesis and physical properties of long-chain ethyleneoxy esters.

F. W. Breitbeil and J. L. Schranz, "Ring Opening of 1,2-Bis-(trimethylsiloxy)-1,2-dimethylcyclopropanediol with Hydrogen Bromide and Bromine", J. Org. Chem., 44, 4649(1979).

DHAR, SANAT K. (b. 1928) Professor. M.S., 1959, Ph. D., 1961, Wayne State University. Inorganic Chemistry. Group IV and Transition Group elements, coordination chemistry in nonaqueous solvents, oxygen carriers, iron and copper compounds, polarography.

S. K. Dhar and T. J. Thornton, "Tartaric acid complexes of Silicon(IV)." J. Inorg. Chem., 42, 1201(1980).

S. K. Dhar and P. G. Jasien, "Studies of some Cu(II) succiniate Complexes." J. Inorg. Nuc. Chem., 42, 924(1980).

S. K. Dhar and S. Sichak, "Structure of Sodium Ferric Citrate", J. Inorg. Nuc. Chem., 41, 126(1979).

MEYER, EDWIN F. (b. 1937) Professor. B.S., 1959, DePaul University, Ph. D. 1962, Northwestern University. Physical Chemistry. Thermodynamics of solution and adsorption using gas chromatography, measurement of vapor pressure, physical adsorption on solids.

Sixteen publications, 1976 - present.

E. F. Meyer, "Thermodynamics of Adsorption using Gas-Solid Chromatography", J. Chem. Educ., 57, 120(1980).

E. F. Meyer and T. H. Gens, "Comparison of n-Tetracosane, n-Didodecyl Ether and n-Didodecyl Thioether as Solvents using Gas-Liquid Chromatography", J. Chem. Thermo., 11, 719(1979).

E. F. Meyer and J. P. Byrne, "Adsorption Isotherms of CH_3I on Spheron 6 Graphite between 0 and 82°C.", accepted by J. Phys. Chem.

E. F. Meyer and M. J. Awe, "Cohesive Energies in Polar Organic Liquids. IV. n-Alkyl Acetates", accepted by J. Chem. Eng. Data.

E. F. Meyer and *F. A. Baiocchi, "A Comparison of Gas-Liquid Chromatographic Enthalpies of Solution with Calorimetric Values for Four Alkane Systems", J. Chem. Thermo., 10, 823(1978).

Current Research Grants: Research Corporation, $3,400, Entropy of Adsorption at Zero Coverage Using Gas-Solid Chromatography.

Research Corporation, $8,331, Thermodynamics of Phase Changes in Two Dimensions.

MELFORD, SARA S. (b. 1942) Assistant Professor. B.S., 1964, Bowling Green State University, Ph. D., 1968, Northwestern University. Inorganic Chemistry. Solid waste chemistry, mass spectrometry, compounds of V, Nb and Ta.

Richard M. Fowler and Sara Steck Melford, "$FeAlCl_6$, a Volatile Molecule Formed by the Reaction of Aluminum Chloride with Ferric Chloride", Inorg. Chem., 15, 473(1976).

MURPHY, THOMAS J. (b. 1941) Associate Professor. B.S., 1963, University of Notre Dame, Ph. D., 1967, Iowa State University, Ames, Iowa. Organic Geochemistry. Sources to, concentrations in, and deposition from the atmosphere of organic compounds, particularly those thought to be hazardous.

T. J. Murphy, A. Schinsky, *G. Paolucci, and *C. P. Rzeszutko. "Inputs of PCBs from the Atmosphere to Lakes Huron and Michigan." In Atmospheric Inputs of Pollutants to Natural Waters. S. J. Eisenreich, Ed., Ann Arbor Press, 1980.

T. J. Murphy, "Evaluation of a Technique for Measuring Dry Aerial Deposition Rates of DDT and PCB residues", Atmospheric Environment, 13, 000(1980).

T. J. Murphy and C. P. Rzeszutko, "Precipitation Inputs of PCBs to Lake Michigan", J. Great Lakes Research, 3, 305-312(1977).

T. J. Murphy and *P. V. Doskey, "Inputs of Phosphorus from Precipitation to Lake Michigan", J. Great Lakes Research, 2, 60-70(1976).

Grant active 1980-82. U. S. Environmental Protection Agency, $172,800, Polychlorinated Biphenyls in the Atmosphere and in Lake Michigan.

NOVAK, ROBERT L. (b. 1937) Associate Professor. B.S., 1959, Xavier University, Ph. D., 1964, University of Delaware. Biochemistry. Solid phase peptide synthesis and peptide model systems, cancer biochemistry, gene cloning.

PASTERCZYK, WILLIAM R. (b. 1917) Professor and Administrative Assistant. B.S., 1940, M.S., 1942, DePaul University, Ph. D., 1954, Loyola University, Stritch School of Medicine. Analytical Chemistry and Biochemistry.

PROUT, FRANKLIN S. (b. 1920) Professor. B.S., 1941, University of Colorado, Ph. D., 1947, Valderbilt University, Nashville, Tenn. Organic Chemistry. Syntheses of alicyclic compounds, condensation reactions.

DICKINSON COLLEGE

Carlisle PA 17013

Fall 1980 ug enrollment 1744

Degrees offered B.S., B.A.

Telephone (717) 245-1296

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5.3. 2. Support staff, FTE's: Sec'y .8 Stockrm 1 Technical 0
3. 1980 seniors & their placement: Total 11 Grad. school 3 Industry 0 Professional schools 6 Other 2.
4. Senior majors, average past five years: 12.
5. Undergraduates involved in research, average past five years: Academic year 13 Summer 0
6. Master's program? no Master's degrees conferred, average past five years: n/a
7. National honors, undergraduate or senior majors, past five years:

   none

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 15 000
2. Instrumentation:

   NMR (Varian T-60)
   UV-Vis (P-E/Hitachi 139, Beckman DBG)
   Fluorimeter (Turner 110)
   GC (F&M 700, two Carle)
   IR (P-E 221 and 710A)
   AA (IL 251)
   Raman (Cary 81)
   HPLC (Waters components)

3. Library resources: CA? yes Volume indices? yes Collected indices? most Total journal subscriptions? 24 Computer literature search service? yes Separate chemistry or science library? yes Librarian? no Standing orders for review series and annual reviews (past five years) 9.

4. Computer facilities: Department: one DEC LA-36 Decwriter II; another LA-36 and a Heath/Zenith CRT terminal elsewhere in building.
   Campus: DEC PDP 11/70 time sharing system

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   approx. $3200

2. Departmental grants:

   ISEP $7400; local industry $1000; instrument donation

3. Faculty teaching loads: Contact hours 10-11 Load credit for research? no

4. Sabbatical or leave support for research:

   Half salary for full year or full salary for one semester. Eligible every seven years.

FACULTY PROFILE

BENSON, JOHN E. (b. 1924) Professor. B.S., 1950, Pennsylvania State University, M.A., 1953, Ph.D., 1957, Princeton University. *Physical Chemistry*. Adsorption and catalysis.

LEYON, ROBERT E. (b. 1936) Associate Professor and Chairman. B.A. 1958, Williams College, M.A., 1960, Ph.D., 1962, Princeton University. *Analytical Chemistry*. Trace metal analysis by atomic absorption, environmental chemistry, local water quality, computers in chemistry.

ROPER, GERALD C. (b. 1933) Professor. A.B., 1956, Ph.D., 1966, Boston University. *Physical and Inorganic Chemistry*. Thermodynamics, calorimetry, kinetics of transition metal chemistry, gold (I) complexes.

SCHEARER, WILLIAM R. (b. 1935) Associate Professor. B.S., 1957 Ursinus College, M.A., 1959, Ph.D., 1963, Princeton University. *Organic Chemistry*. Organic synthesis, nutrition, applied chemistry.

SHEELEY, RICHARD M. (b. 1934) Associate Professor. B.S., 1957, University of Utah, M.S., 1959, Pennsylvania State University, Ph.D., 1963, Brigham Young University. *Organic Chemistry*. Stereochemistry, medicinal chemistry, food chemistry, HPLC analysis, NMR analysis.

> "Novel Heterocyclic Systems: 2,6-Dioxa- and 2-Oxa-6-thia-10-azatricyclo $[5.2.1.0^{4,10}]$ decanes; 2,6-dioxa-11-azatricyclo $[5.3.1.0^{4,11}]$ undecane; and 9,13-dioxa-14-azatetracyclo $[6.5.1.0^{2,7}.0^{11,14}]$ tetradeca-2,4,6-triene." H. Smith Broadbent, W. S. Burnham, R. M. Sheeley, R. K. Olsen, *Journal of Heterocyclic Chemistry*, *13*, 337 (1976).

DORDT COLLEGE
Sioux Center, IA 51250

Fall 1980 ug enrollment 1160
Degrees offered A.B.
Telephone (712) 722-3771

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 2. 2. Support staff, FTE's: Sec'y 0 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 1 Grad. school 0 Industry 0 Professional schools 1 Other 0.
4. Senior majors, average past five years: 1.
5. Undergraduates involved in research, average past five years:
   Academic year 1 Summer 1
6. Master's program? No Master's degrees conferred, average past five years: None
7. National honors, undergraduate or senior majors, past five years:
   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 8000
2. Instrumentation:
   - GC (Varian Series 1200)
   - GC (Varian A-90-P)
   - AA (Beckman 440)
   - UV (Beckman DB-G)
   - IR (Beckman Microspec)
   - NMR and ESR (Cenco)
   - Polarograph (Sargent Model III)
   - Differential Catalytic Reactor (constructed)
   - Sorptometer (constructed)
3. Library resources: CA? Yes Volume indices? Some Collected indices? No Total journal subscriptions? 20 Computer literature search service? No Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 6.
4. Computer facilities: Campus: Data General Nova 3.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Approximately $2000
2. Departmental grants: None
3. Faculty teaching loads: Contact hours 18 Load credit for research? No.
4. Sabbatical or leave support for research: None

FACULTY PROFILE

GEELS, EDWIN J. (b. 1940) Professor. B.S., 1961, Calvin College, Ph.D., 1965, Iowa State University. Organic Chemistry. Free radical reactions.

MAATMAN, RUSSELL W. (b. 1923) Professor and Chairman. A.B., 1946, Calvin College, Ph.D., 1950, Michigan State University. Physical Chemistry. Heterogeneous catalysis, solution-surface reactions.

Six publications, 1976-1980

R. Maatman, Using the Calculated Site Density as a Criterion in Choosing a Catalytic Slow Step, J. Catal., 43, 1 (1976).

R. Maatman, *C. Friesema, *R. Mellema, and *J. Maatman, The Site Density Criterion and the Mechanism of n-Heptane Cracking over a Rare Earth Type X Sieve, J. Catal., 47, 62 (1977).

R. Maatman, Preparation of Pt-5A Molecular Sieve, J. Catal. 55, 108 (1978).

R. Maatman and *C. Friesema, A Kinetic Study of Propylene Metathesis Over WO_3 - SiO_2 Gel, Proc. Iowa Acad. Sci. 86, 26 (1979).

R. Maatman and *S. Hiemstra, A Kinetic Study of the Methanation of CO_2 Over Nickel-Alumina, J. Catal. 62, 349 (1980).

DRAKE UNIVERSITY

Des Moines, IA 50311

Fall 1980 ug enrollment 4860

Degrees offered B.A.

Telephone (515) 271-2174

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 7 . 2. Support staff, FTE's: Sec'y 1 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 5 Grad. school 1 Industry 2 Professional schools 2 Other 0 .
4. Senior majors, average past five years: 6 .
5. Undergraduates involved in research, average past five years:
   Academic year 3 Summer 2
6. Master's program? No Master's degrees conferred, average past five years: 1
7. National honors, undergraduate or senior majors, past five years: None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 20,700
2. Instrumentation:

NMR: Varian-T-60-A
IR: Beckman IR 8, IR 33
Spectrophotofluorometer: Aminco
UV-VIS: Beckman DK-2A

Polarograph: Sargent Welch
AA: Varian Model 1200 (2)
GC: Aerograph A-90-P,
Aerograph HY-FI 600-D

3. Library resources: CA? Yes Volume indices? Yes Collected indices? No Total journal subscriptions? 54 Computer literature search service? Yes Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 21 .

4. Computer facilities:
   Campus: VAX 11/780 Approximately 60 terminals on campus.
   Department: Two terminals for VAX 11/780, no internal charges for use.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Approximately 1200/year, chemicals, Approximately 1000/year, equipment.

2. Departmental grants: None

3. Faculty teaching loads: Contact hours 15 Load credit for research? Negotiable

4. Sabbatical or leave support for research: Faculty may apply for sabbatical leave at 100% salary for one half year or 50% salary for full year. Frequency averages every seven years.

FACULTY PROFILE

BROWN, LAWRENCE E. (b. 1940) Associate Professor and Chairman. B.S., 1962, University of Dayton, M.S., 1966, Ph.D., 1973, The Pennsylvania State University. *Bio-organic Chemistry*. Applications of fluorescence probes in enzyme and membrane studies. Photosensitized singlet oxygen generation.

*R. A. Eades, C. H. Douglass and L. E. Brown, "Computer Facilitation of Concept Acquisition", J. Chem Educ., 56 (8), 545 (1979).

DOUGLASS, CHARLES H. Jr., (b. 1949) Assistant Professor. B.A., 1971, University of the South, Ph.D., 1975, University of Minnesota. *Physical Chemistry*. Atmospheric Chemistry, theoretical calculations, chemical education.

Eight publications, 1976-80.

C. H. Douglass, D. J. McClure and W.R. Gentry, "The Dynamics of the Reaction $H_2^+ + H_2 \quad H_3^+ + H$, with Isotopic Variations.", *J. Chem. Phys.* *67*, 4931 (1977)

*R. A. Eades, C. H. Douglass and L. E. Brown, "Computer Facilitation of Concept Acquisition", *J. Chem. Educ.* *56*, 545 (1979).

C. H. Douglass "Educational Handicaps in Chemistry Students, *Iowa Science Teachers Journal*, *17* (2) 2, (1980).

*R. A. Eades, D. A. Weil, D. A. Dixon and C. H. Douglass, "The Inversion Barriers in Methyl-Substituted Amines, *J. Phys. Chem.*, in press.

C. H. Douglass,*D. A. Weil, *P. A. Charlier, R. A. Eades, D. G. Truhlar and D. A. Dixon, "Adiabatic Polarization Potentials for the Water and Nitrogen Molecules. A Comparison of Large and SmallBasis Sets." To appear in Molecular Electrostatic Potentials in Chemistry and Biochemistry, P. Politzer and D. G. Truhlar (editors), Plenum,

Grant active; Research Corporation, $1,200.

FUNKE, LAWRENCE A. (b. 1949) Assistant Professor. B.S., 1971, University of Dayton, Ph.D., 1976, Michigan State University, Postdoctoral Fellow, 1976-77, Northwestern University. *Inorganic Chemistry*. Transition metal coordination compounds, especially the reactions of compounds containing macrocyclic ligands. Bio-inorganic chemistry, particularly the synthesis, characterization and reactions of compounds which may act as models for natural systems.

L. A. Funke and J. H. Espenson, Organochromium (III) Complexes Derived from Nitriles, *Inorg. Chem.*, (1981) in press.

HILLS, DIANE C. (b. 1942) Instructor. B.S., 1963, Iowa State University, M.S., 1966, Ph.D., 1981. *Biochemistry*, Studies on Transfer RNA.

LINDBERG, JAMES G. (b. 1940) Professor. B.A., 1962, Kalamazoo College, Ph.D., 1969, Baylor University. *Organic Chemistry*. Nuclear Magnetic Resonance, Steric and structural effects.

G. R. Parker, *N. K. Hilgendorf and J. G. Lindberg, "Solvent Dependent Conformational System in Hydroxyureas Detected by NMR Spectroscopy", *J. Pharm. Sci.*, *65*, 585 (1976).

WHITE, RICKY C. (b. 1948) Assistant Professor. B.S., 1971, Sam Houston State University, M.S., 1973, Ph.D., 1977, University of Iowa, Postdoctoral Fellow, 1977-78, University of Arkansas. *Analytical and Organic Chemistry*. Synthetic and Mechanistic Photochemistry, Small ring heterocycles.

R. C. White and R. E. Buckles, "Encounter Complexes in Singlet Quenching", *J. Photochem.*, *7*, 359 (1977).

R. C. White and R. E. Buckles, "Encounter Complexes in Singlet Quenching II. Quenching of 2,6-Dimethoxynaphthalene by Benzyl Chlorides", *J. Photochem.*, *8*, 67 (1978).

R. C. White, J. Scoby and T. D. Roberts, "Reduction as a Probe for Benzothiirene Intermediates: Thermal and Photochemical Decomposition of 1,2,3-Benzothiadiazoles", *Tetrahedron Lett.*, 2785 (1979).

R. C. White, "Epoxide Formation by the Photolysis of Cyclic Oxalate Esters", *Tetrahedron Lett.*, 1021 (1980).

Grants Active: Research Corporation, 1980-81, $7,180, Photochemical Reactions of Cyclic Oxalate Esters.

WOODS, JOE D. (b. 1923) Professor. B.A., 1947, Central College, M.S., 1952, Iowa State University, Ph.D., 1954. *Inorganic Chemistry*. Use of radioactive tracers in inorganic reaction mechanisms, oxidation of metals, thermal decomposition reactions of oxyanions.

DREW UNIVERSITY
Madison, New Jersey 07940

Fall 1980 ug enrollment 1550
Degrees offered A.B.
Telephone (201) 377- 3000

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 6.5. 2. Support staff, FTE's: Sec'y 0.4 Stockrm 1.4 Technical 0
3. 1980 seniors & their placement: Total 9 Grad. school 5 Industry 2 Professional school 2 Other 0.
4. Senior majors, average past five years: 10.
5. Undergraduates involved in research, average past five years: Academic year 6 Summer < 1
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years: None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 13,000
2. Instrumentation:
   - NMR (JEOL JNM-PMX 60)
   - UV/Vis (Hitachi 110, PE 202)
   - MS (CEC 21-614)
   - GC (Varian 3700, Gow-Mac 500P and 750)
   - LC (Gow-Mac, LDC, Haskell, PE)
   - IR (Pye/Unicam SP 1025, PE 727)
   - Polarograph (Sargent 4001)
   - AA (Varian 1000)
   - Electrophoresis (Camag)
   - SEM (ISI Super IIIA)
3. Library resources: CA? Yes Volume indices? No Collected indices? No Total journal subscriptions? 46 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 37.
4. Computer facilities: Department: Varian CDS III
   Campus: HP-3000

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   $1000 expendable supplies
2. Departmental grants:
   Dreyfus, $18,000
3. Faculty teaching loads: Contact hours 12 Load credit for research? occasional
4. Sabbatical or leave support for research:
   Sabbatical leaves at full salary for a semester or half-salary for a year.
   Eligibility: every 7th year

FACULTY PROFILE

deSTEVENS, GEORGE (b.1924) Research Professor of Chemistry and Director of Research Institute for Scientists Emeriti (RISE).B.S., 1950,Fordham College, Ph.D., 1953 Fordham University, New York. Organic Chemistry and Medicinal Research. The Synthesis of heterocylces with potential biological activity. Antihypertensives, anti-inflammotories and central nervous system drugs.

George deStevens and A.J.Plummer, "Chemical Transmitters and the Control of Blood Pressure", How Modern Medicines are Discovered,Futura Publishing, NY(1976)

George deStevens, "The Interface Between Drug Research, Marketing, Management and Social,Political and Regulatory Forces",Progress in Drug Research Vol.20, 181-196 (1976)Birkhauser Verlag, Basel, Switzerland

George deStevens and Max Wilhelm, "Antihypertensive Agents" Progress in Drug Research Vol.20, 197-259 (1976) Birkhauser Verlag, Basel Switzerland

George deStevens,"The Medicinal Control of Degenerative Vascular Disease" Proceedings of VIIth International Symposium on Medicinal Chemistry,Malaga,Spain 1980, Pergamon Press, in press

KEELER, ELAINE K.(b.1941) Assistant Professor,B.A. 1966, College of St Elizabeth, M.S.,1970,Purdue University, Ph.D.,1977, New York University. Bio—organic Chemistry. Cyclic AMP binding proteins; Photoaffinity labeling;Fluorescent probes; Enzymic regulation; Enzyme kinetics.

E.K.Keeler and P.Campbell, "A Fluorescent Photoaffinity Label for Cyclic AMP Binding Proteins",Biochem. Biophys. Res.Commun., 72 (2), 575-580 (1976).

KING, BALDWIN A.(b.1941) Associate Professor, B.S. 1964, University of the West Indies, Ph.D.,1968, University of California, Berkeley, Organomettalic Chemistry. Fundamental studies in Ziegler-Natta type catalysis;synthesis,spectral characterization and reactions of alkyl and aryl derivatives of tin and titanium.

Baldwin King,K.Magnus and J.W.Smith, "A Course in Applied Chemistry at a Third World University", Eur. J. Sci. Educ., 2, 407(1980).

Baldwin King and F.Bramwell, "The Photolysis of Rigid Solutions of Triphenyl Tin Anion", Accepted for publication in J.Inorg. and Nucl. Chem.

Grant active, 1979-80: Sloan Foundation, $20,000. Fundamental Studies in Organometallic Catalysis.

MILLER, JAMES M.(b.1933) Professor and Chairman. B.S. 1955, Elizabethtown College, M.S.,1958 and Ph.D.,1960, Purdue University. Analytical Chemistry. Separation methods; gas and liquid chromatography; chromatographic detectors.

J.M.Miller and R.Strusz, "A UV Detector for Preparative LC", Am.Lab. 12 [1], 29 (1980)

J.M.Miller and E.Tucker, "Use of HPLC for Multicomponent Serum Analysis", Am.Lab. 11 [1], 17 (1979)

J.M.Miller, "Gas Chromatographic Analysis of Aerosol Propellants", J.Chem.Educ. 54, 735 (1977)

A.E.Lawson, R.Mathieu, A.J.P.Martin,and J.M.Miller, Christiansen Effect Detector, U.S. Patent #4,042,304 (1977)

MORAN, WILLIAM J.(b.1912) Adjunct Research Professor. B.S.,1937,Washington and Lee, M.S.,1940, and Ph.D.,1949, New York Polytechnic Institute. Organic Chemistry. Preparation of substituted indenes and other compounds of possible pharmacological activity. Dr. Moran is a retired industrial chemist who spends half time in undergraduate research.

SCOTT, DONALD A. (b.1917) Professor. A.B., 1939, Cornell College, M.S., 1941 University of Arizona, Ph.D., 1952, University of Iowa. Organic Chemistry. Natural products from bark, and hydrogen-deuterium exchange on carbon attached to sulfur.

DRURY COLLEGE
Springfield, MO 65802

Fall 1980 ug enrollment 1125
Degrees offered A.B., B.S.
Telephone (417) 865-8731, ext 247

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 3 . 2. Support staff, FTE's: Sec'y 0 Stockrm 1 Technical 0
3. 1980 seniors & their placement: Total 13 Grad. school 4 Industry 1 Professional schools 8 Other 0 .
4. Senior majors, average past five years: 12 .
5. Undergraduates involved in research, average past five years:
   Academic year 4 Summer 8
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 36,000
2. Instrumentation:
   - NMR - 90 MHz (Varian EM300 Anaspect)
   - MS (VeeCo SDI-10 Monopole)
   - UV-Vis (Beckman DB and Beckman B)
   - AA (Varian 1000 Techtron with Model 63 Carbon Rod Atomizer)
   - Polarograph (Sargent FS)
   - GC (Barber-Colman 5340 T C and Gow-Mac Series 150 T C)
   - IR (Perkin-Elmer 700 and Beckman Anaspect)
   - Electrophoresis (Beckman Model R)
   - Potentiometer (Leeds and Northrup K-3 & K-5)
   - Conductivity (YSI 31 Bridge)
3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 20 Computer literature search service? No Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 20 .
4. Computer facilities:
   On campus: Burroughs Model 1955; Apple II microprocessor; off campus at Southwest Missouri State University IBM 370-165 with remote console and printer

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Approximately $5,000/annum for chemicals, equipment and glassware
2. Departmental grants:
   ACS Project Seed, 1980; $1,000
   NSF - Pre-college Teacher Development in Science, 1980; $23,000.
3. Faculty teaching loads: Contact hours 15 Load credit for research? No .
4. Sabbatical or leave support for research:
   Faculty can apply for sabbatical leave at 50% salary for a full (academic) year, or full salary for ½ year, every seventh year

FACULTY PROFILE

GIBBONS, James J. (b.1946) Associate Professor of Chemistry. A.B. cum laude, 1968, Drury College; Ph.D., 1974, Louisiana State University. Analytical and Inorganic Chemistry. Ionization Constants of Ampholytes in Mixed Solvent Media, Ionic Equilibria in Mixed Solvent Systems.

Thirty-nine publications, 1976-1980.

R.N. Roy, J.J. Gibbons, *G. LaCross, Jr. and *C.W. Krueger, Dissociation Constants of the Ampholyte Glycine in 50 Mass % Methanol-Water from 5 to 55°C, with Related Thermodynamic Quantities, J. Soln. Chem., 5, 333 (1976).

B. Sen and J.J. Gibbons, Ionic Equilibria in Mixed Solvents: Formation of Calcium Lactate, J. Chem. Eng. Data, 22, 309 (1977).

R.N. Roy, J.J. Gibbons and *C. Tillman, Jr., Dissociation Constants of m-Nitroanilinium Ion in 1,2-Dimethoxyethane-Water Mixtures at 25°C by Spectrophotometric Measurements, Anal. Chim. Acta, 97, 207 (1978).

B. Sen, R.N. Roy, J.J. Gibbons, D.A. Johnson and L.H. Adcock, Computational Techniques of Ionic Processes in Water-Organic Mixed Solvents, A.C.S. Advances in Chemistry Series, Vol. 177, Chap. 15 (1979).

R.N. Roy, J.J. Gibbons, J.L. Padron and *J. Moeller, Second-Stage Dissociation Constants of Piperazine-N,N'-bis(2-ethanesulfonic acid) Monosodium Monohydrate and Related Thermodynamic Functions in Water from 5 to 55°C, Anal. Chem., December (1980).

Grant active 1979-80: Drury College, $2,000.

PADRON, Jorge L. (b.1931) Professor of Chemistry, Dean of the College, Vice-President for Academic Affairs and Intertim President. B.S., 1952, Oklahoma Baptist University; M.S., 1954, Ph.D., 1956, University of Oklahoma. Organic and Biochemistry. Isolation and Identification of Natural Metabolites in Body Fluids; Studies of Diabetic Mice.

Five publications, 1976-1980.

R.N. Roy, J.J. Gibbons, J.L. Padron, *K. Buechter and *S. Faszholz, Thermodynamic Study of Glycine in Different Tetrahydrofuran-Water Mixtures at Several Temperatures from 278.15 to 328.15 K, A.C.S. Advances in Chemistry Series, Vol. 177, Chap. 18 (1979).

R.N. Roy, J.J. Gibbons, J.L. Padron and *J. Moeller, Piperazine-N,N'-Bis (2-Ethanesulfonic Acid) Monosodium Monohydrate ("Pipes") for the Measurement of pH in Blood and Other Physiological Media, Clin. Chem., December (1980).

J.L. Padron and *S. Langguth, Glucosamine Acetoacetate Condensate. IV. Its Effect Upon Diabetic Mice, Acta Diabetologica, October (1980).

ROY, Rabindra N. (b.1939) Professor and Chairman, Department of Chemistry. B.Sc. (Honors), 1959, M.Sc.(Honors), 1961, Jadavpur Univ.,; Ph.D., 1966, Louisiana State University. Physical and Analytical Chemistry. Ion-ion Interactions in Mixtures of Strong Electrolytes, Standard Buffers for Use in Biological Fluids.

Thirty-nine publications, 1976-1980.

R.N. Roy, J.J. Gibbons, *R. Snelling, *J. Moeller and *T. White, The System $HBr + (Pr)_4NBr + H_2O$ at 25°C. Application of Pitzer's Equations, J. Phys. Chem., 81, 391 (1977).

K.S. Pitzer, R.N. Roy and L.F. Silvester, Thermodynamic of Electrolytes. 7. Sulfuric Acid, J. Amer. Chem. Soc., 99, 4930 (1977).

R.N. Roy, J.J. Gibbons, *J. Moeller and *R. Snelling, Thermodynamic Behavior

ROY, RABINDRA N., cont'd

of Tetraalkylammonium Bromide and Hydrobromic Acid in Aqueous Media at 298.15 K, A.C.S. Advances in Chemistry Series, Vol. 177, Chap. 17 (1979).

R.N. Roy, J.J. Gibbons, *J.K. Trower and *G.A. Lee, Application of Pitzer's Equations on the System HCl + $MnCl_2$ + H_2O at Various Temperatures. V., J. Soln. Chem., 9, 535 (1980).

R.N. Roy, J.J. Gibbons, *D.P. Bliss, Jr., *R.G. Casebolt and *B.K. Baker, VI. The System HCl + $MgCl_2$ + H_2O at Different Temperatures; Application of Pitzer's Equations Including Higher Order Electrostatic Effects, J. Soln. Chem., December (1980).

Grants active 1979-1980: NIH, \$9,000 (\$6,000 direct cost), second of three years.

PRF-B, \$6,500, first year of two.

EARLHAM COLLEGE
Richmond, Indiana 47374

Fall 1980 ug enrollment 1102
Degrees offered A.B.
Telephone (317) 962-6561

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 3 . 2. Support staff, FTE's: Sec'y 1 Stockrm 0.5 Technical 0.3
3. 1980 seniors & their placement: Total 7 Grad. school 4 Industry 1 Professional schools 1 Other 1 .
4. Senior majors, average past five years: 9 .
5. Undergraduates involved in research, average past five years:
   Academic year 8 Summer 3
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:
   1979 - Joseph Falke, NSF fellowship
   1980 - Brian Treadway, NSF fellowship

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 13,500
2. Instrumentation:
   - NMR (Varian - 360A)
   - IR (PE 700 and PE 457)
   - AA (PE 503)
   - UV-Visible (Beckman DB and Beckman ACTA 111)
   - Microbalance (Sartorius 2405)
   - X-Ray Diffraction (Norelco)
   - Platinum Resistance Thermometer (L&N)
   - Quartz thermometer (Hewlett Packard 2804)
   - Gouy balance
   - GC (Aerograph 600 D)
3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 29 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? Yes Standing orders for review series and annual reviews (past five years) 13 .
4. Computer facilities:
   Department: 1-DEC LA-36 and 1 DEC VT-100
   Campus: DEC PDP 11/70 Time sharing system

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: No designated amount but college has faculty development program that will provide small grants for research.
2. Departmental grants: NSF 3-69A grants total $60,000
   Reilly Tar & Chemical grant - $1000
3. Faculty teaching loads: Contact hours 15-18 Load credit for research? No
4. Sabbatical or leave support for research:
   After six years teaching: full salary for one quarter leave
   half salary for one year leave

FACULTY PROFILE

BAKKER, GERALD R. (b. 1933) Professor and Convener. A.B., 1955, Calvin College, Ph.D., 1959, University of Illinois. Organic Chemistry. Synthesis and structure determination of hindered aromatic acids. Philosophy of science.

G. R. Bakker, J. B. Francis, C. B. Neff, and S. C. Scholl, "Professional development of faculty", Criteria IV (1977).

G. B. Bakker and staff, "A program for integrative education", Change Report 6 on Teaching, 44 (1978).

G. R. Bakker and P. A. Lacey, "The teaching consultant at Earlham", Chap. in "Effective approaches to faculty development" by C. Nelson and N. E. Siegel, Assoc. of Amer. Colleges, 1980.

OGREN, PAUL J. (b. 1941) Associate Professor. A.B. 1963, Earlham College, Ph.D. 1968, University of Wisconsin. Physical Chemistry. Aluminum halide-ether complexes, photolysis reactions.

C. J. Hochanadel, J. A. Ghormley, J. W. Boyle, and P. J. Ogren, "Absorption spectrum and rates of formation and decay of the CH_3O_2 radical", J. Phys. Chem., 81, 3, (1977).

T. J. Sworski, C. J. Hochanadel, and P. J. Ogren, "Flash photolysis of H_2O vapor in CH_4", J. Phys. Chem., 34, 29, (1980).

C. J. Hochandel, T. J. Sworski, and P. J. Ogren, "Ultraviolet spectrum and reaction kinetics of the formyl radical", J. Phys. Chem., 84, 231, (1980).

C. J. Hochandel, T. J. Sworski, and P. J. Ogren, "Rate constants for the reactions of HO_2 with OH and with HO_2", J. Phys. Chem., 84 , 3274 (1980).

S.M. Koop and P.J. Ogren, "HO_2 Kinetics in Simple Systems", J. Chem. Ed., 53, 128 (1976).

STRATTON, WILMER J. (b. 1932) Professor. A.B., 1954, Earlham College, Ph.D. 1958, Ohio State University. Inorganic Chemistry. Stereochemistry of metal coordination compounds, Polydentate ligands containing aromatic hydrazone and azine groups. Trace analysis for heavy metals by AA.

H. W. Smith and W. J. Stratton, "Preparation, properties and molecular structure of ethylenediammonium tetrachlorocobalt(II)chloride", $(NH_3CH_2CH_2NH_3)_2(CoCl_4)Cl_2$", Inorganic Chemistry, 16, 1640 (1977).

STRONG, LAURENCE E. (b. 1914) Research Professor (retired). A.B., 1936, Kalamazoo College, Ph.D., 1940, Brown University. Physical Chemistry. Thermodynamics of acid ionization, substitution effects, electrolyte conductivity as a function of temperature.

L. E. Strong, "Aqueous Hydrochloric Acid Conductance from 0 to 100°C", J. Chem. & Eng. Data, 25, 104 (1980).

L. E. Strong, T. G. Copeland, *M. Darragh, and *C. Van Waes, "Aqueous toluic acids: Conductance and Thermodynamics", J. Soln. Chem., 9, 109 (1980).

L. E. Strong, *T. Kinney, and *P. Fischer, "Aqueous benzoic acid: Conductance and thermodynamics", J. Soln. Chem., 8, 329 (1979).

L. E. Strong and *D. Drake, "Aqueous mandelic acid: Conductance and thermodynamics", Proc. Indiana Acad. Sci., 88, 140 (1979).

Grant active 1980-82: Research Corporation Cottrell College Science Grant, $11,180, "Conductance and Thermodynamics of Ionization of Substituted Benzoic Acids in Water from 0 to 100 degrees C."

ECKERD COLLEGE

St. Petersburg, Florida

Fall 1980 ug enrollment 1123

Degrees offered BA, BS

Telephone (813) 867-1166

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 3 . 2. Support staff, FTE's: Sec'y 0.25 Stockrm 0.5 Technical 0.25
3. 1980 seniors & their placement: Total 2 Grad. school 0 Industry 2 Professional schools 0 Other 0 .
4. Senior majors, average past five years: 3.4 .
5. Undergraduates involved in research, average past five years: Academic year 1 Summer 1
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years: None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 9,500
2. Instrumentation:
   NMR (Varian EM-360A)
   IR's (P-E 457 and 700)
   GC (Varian 3700) plus 2 student models
   UV-Vis (Cary 14, Beckman DU and DB)
   Differential Refractometer
   Bryce Phoenix Light Scattering Photometer
   Rudolph Precision Polarimeter
   Sargent XV Polarograph

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 38 Computer literature search service? No Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 0 .

4. Computer facilities:
   Honeywell 1640 Time Sharing System
   Wang 2200-S (Microcomputer)

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   $1,500 / yr. for chemicals, project grants and travel expenses

2. Departmental grants:
   NSF ISEP grant $13,350

3. Faculty teaching loads: Contact hours 17-18 Load credit for research? No

4. Sabbatical or leave support for research:
   Full salary for one-half year or half salary for full year in the sixth year of service to the college if tenured.

FACULTY PROFILE

GUIDA, WAYNE C. (b. 1946) Assistant Professor. B.A., 1968, University of South Florida; Ph.D., 1976, University of South Florida. Organic Chemistry. Synthesis.

*David J. Mathre and Wayne C. Guida, Dissolving Metal Reductions w/Sodium Potassium Alloy in the Presence of 18-Crown-6, Tetrahedron Lett., 21, 4773 (1980).

Douglas J. Raber and Wayne C. Guida, Tetrabutylammonium Borohydride: Borohydride Reductions in Dichloromethane, J. Org. Chem., 41, 690 (1976).

Douglas J. Raber, Patrick Gariano, Albert O. Brod, Anne L. Gariano and Wayne C. Guida, Esterification of Carboxylic Acids with Trialkyloxonium Salts: Ethyl and Methyl 4-Acetoxybenzoates, Org. Synth., 56, 59 (1977).

Douglas J. Raber, Patrick Gariano, Albert O. Brod, Anne L. Gariano, Wayne C. Guida, Anne R. Guida and *Mark D. Herbst, Esterification of Carboxylic Acids with Trialkyloxonium Salts, J. Org. Chem., 44, 1149 (1979)

Wayne C. Guida and *David J. Mathre, Phase Transfer Alkylation of Heterocycles in the Presence of 18-Crown-6 and Potassium tert-Butoxide, J. Org. Chem., 45, 3172 (1980).

Grant active 1979-1980: Research Corporation Cottrell College Science Grant, $11,000, Chiral Crown Ethers in Asymmetric Synthesis.

HUDSON, REGGIE L. (b. 1952) Assistant Professor. A.B., 1974, Pfeiffer College, Ph.D., University of Tennessee. Physical Chemistry. Radiation chemistry, electron spin resonance spectroscopy, free radical structure and bonding.

R.L. Hudson and F. Williams, "The Radical Anion of Trimethyl Phosphite", J. Chem. Soc., Chem. Comm., 1125 (1979).

R.L. Hudson and F. Williams, "An Electron Spin Resonance Study of the Photolysis of Trapped Radicals in γ-Irradiated Carboxylic Esters at 77-87 K", J. Phys. Chem., 82, 967 (1978).

R.L. Hudson and F. Williams, "Electron Spin Resonance Spectrum of $[(MeO)_3B\cdot B(OMe)_3]^-$. A Novel σ Radical with a One-Electron Bond", J. Am. Chem. Soc., 99, 7714 (1977).

NEITHAMER, RICHARD W. (b. 1929) Professor and Chairman. B.S., 1951, Allegheny College; Ph.D., 1957, Indiana University. Inorganic Chemistry. Coordination chemistry, environmental studies, mineralogy, crystallography.

ELIZABETHTOWN COLLEGE
Elizabethtown, PA 17022

Fall 1980 ug enrollment 1416
Degrees offered BS
Telephone (717) 367-1151

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty FTE: 7. 2. Support staff, FTE's: Sec'y 0.75 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 19 Grad. school 4 Industry 1 Professional schools 1 Other 13.
4. Senior majors, average past five years: 20.
5. Undergraduates involved in research, average past five years:
   Academic year 3 Summer 2
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years: 0

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 19,000
2. Instrumentation:

NMR (Varian EM360A)	Voltammeter (L&N Type E)
IR (PE 257, 337, 283)	Liq. Scint. (N-C Unilux III)
UV-VIS (Cary 14, GCA/MCP EU-700-56)	X-ray (Picker)
GC (Loenco 160 + 4 others)	Hydrogenation Apparatus (Parr)
AA (J-A Atomsorb)	HPLC (Altex)

3. Library resources: CA? Yes Volume indices? Yes Collected indices? No Total journal subscriptions? 41 Computer literature search service? No Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 11.

4. Computer facilities: Campus: DEC-10 with 128K 36 bit word memory, disk driver, tape drive, card reader, high speed line printer, incremental plotter. Department: DEC PDP -8/E Minicomputer with 8K memory, dual disk drive, storage display, X-Y plotter, Decwriter II, graphics display terminal.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   Approximately $1,000 for chemicals, equipment, and travel expenses.

2. Departmental grants:

   NSF 69A, $25,000.

3. Faculty teaching loads: Contact hours 15 Load credit for research? No.

4. Sabbatical or leave support for research:

   Sabbatical possible after every six full years of service; full salary for one semester or half salary for two semesters.

FACULTY PROFILE

HEDRICK, JACK L. (b. 1937), Professor and Chairman. B.S., 1957, Elizabethtown College, M.S., 1962, University of Pittsburgh. *Analytical Chemistry*. Construction of small pyrolysis gas chromatographs, identification of bacteria by pyrolysis gas chromatography.

PROCTOR, ZOE G. (b. 1934), Professor. B.S., 1956, Elizabethtown College, M.S., 1960, Bucknell University. Additional graduate study, University of Delaware. *Organic Chemistry*. Nitrogen heterocycles and natural products.

RANCK, JOHN P. (b. 1936), Professor. B.S., 1958, Elizabethtown College, M.A., 1960, Ph.D., 1962, Princeton University; postdoctoral at University of California, Berkeley and H.C. Ørsted Institute, University of Copenhagen. *Theoretical Chemistry*. *Ab initio* molecular orbital calculations; computers in chemistry.

J.P. Ranck, A Course in Computer Interfacing and Instrument Automation Based Upon Student Projects, *Proceedings of the Seventh Conference on Computers in the Undergraduate Curriculum*, *7*, 127 (1976).

R. R. Reeder and J. P. Ranck, ELIZA - A Chemical Information System for Undergraduates, *Proceedings of the Seventh Conference on Computers in the Undergraduate Curriculum*, *7*, 53 (1976).

Four computer programs distributed through program exchanges and one program distributed commercially.

REEDER, RAYMOND R. (b. 1943), Associate Professor. B.S., 1965, Case Western Reserve University, Ph.D., 1970, Brown University. *Physical and Analytical Chemistry*. Computer assisted learning, data base utilization and simulation. Energy conversion.

SCHAEFFER, CHARLES D., JR. (b. 1948), Assistant Professor. B.S., 1970, Franklin and Marshall College, Ph.D., 1974, State University of New York at Albany; postdoctoral, 1974-76, Yale University. *Organometallic Chemistry*. Synthesis, reactivity and structure of novel divalent main group compounds, carbon-13 chemical shifts and coupling constants as structure assignment aids in complex molecules, multinuclear NMR spectroscopy.

Six publications 1976-80.

W.D. Honnick, Mc. C. Hughes, C.D. Schaeffer, Jr., and J. J. Zuckerman, "Tin-119*m* Mossbäuer, Infrared, Nuclear Magnetic Resonance, Equilibrium and Thermodynamic Measurements on Complexes of Dimethyltin Dichloride with Substituted 1,10-Phenanthrolines and 2,2'-Bipyridines," *Inorg. Chem.*, *15*, 1391 (1976).

M.E. Bishop, C. D. Schaeffer, Jr., and J. J. Zuckerman, "Far Infrared and Raman Assignments of Substituted Aryltrimethyltins," *Spectrochim. Acta, Part* A, *32*, 1519 (1976).

C. H. Yoder, F. K. Sheffy, R. Howell, R. E. Hess, L. Pacala, C.D. Schaeffer, Jr., and J. J. Zuckerman, "Multiple Regression Analysis of Carbon-13 Chemical Shifts and Carbon-13 Proton Coupling Constants in *Ortho*-Substituted Aromatics," *J. Org. Chem.*, *41*, 1511 (1976).

SCHAEFFER, CHARLES D.,Jr., cont'd

J. W. Faller, B. V. Johnson, and C. D. Schaeffer, Jr., "Organometallic Conformational Equilibria. XX. Preferred Orientations and Rotational Barriers of π-Olefins in Chiral Tin-Iron Compounds. The Isolation of Diastereoisomers in Prochiral Olefin Derivatives," J. Am. Chem. Soc., 98, 1395 (1976).

C. D. Schaeffer, Jr., J. J. Zuckerman, and S. E. Ulrich, "On the Relationship Between the Tin-119*m* Mössbauer Isomer Shift and Nuclear Magnetic Resonance Parameters of Organotin Compounds: Extension of the May and Spijkerman Model to Carbon-13 NMR Measurements on Phenyltrimethyltins and to Higher Alkyltin Hydrides," Inorg. Nucl. Chem. Lett., 14, 55 (1978).

SPANGLER, MARTIN O.L. (b. 1928), Professor. B.S., 1950, Bridgewater College, M.S., 1953, Virginia Polytech. Institute and State University, Ph.D., 1959, Virginia Polytech. Institute and State University. Biochemistry. Synthesis of potential antitumor agents containing sugar moieties, synthesis of physiologically active natural products.

Grant active 1979-80: Ruth W. Spangler Memorial Fund for Cancer Research, $1,700.

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ERSKINE COLLEGE
Due West, S.C. 29639

Fall 1980 ug enrollment 650
Degrees offered B.A. & B.S.
Telephone (803) 379-8825

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 3 . 2. Support staff, FTE's: Sec'y 1/2 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 5 Grad. school 3 Industry 1 Professional schools 1 Other ____.
4. Senior majors, average past five years: 5 .
5. Undergraduates involved in research, average past five years:
   Academic year 3 Summer 1
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   NONE

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 10,500
2. Instrumentation:
   NMR 60 MHz (P-E R 24B)
   G C (P-E 3920B)
   I R (P-E 237B)
   U V-Vis (P-E 570)
   A A (P-E 272)
   9 inch Electromagnet (Walker)
   G C (Hewlett-Packard 700)
   Multichannel Analyzer
   Microbalances, 2-Cahn, R G
3. Library resources: CA? No Volume indices? No Collected indices? No Total journal subscriptions? 12 Computer literature search service? Yes Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 10 .
4. Computer facilities:

   PDP 11 1 Departmental Terminal

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   None
2. Departmental grants:

   NSF-SST $16,600
3. Faculty teaching loads: Contact hours 16 Load credit for research? None .
4. Sabbatical or leave support for research: None

FACULTY PROFILE

FIKES, LEWIS E. (b. 1943) Assoc. Professor. B.A., 1965, Earlham College; M.A.T., 1966, The Johns Hopkins University; M.S., 1970, The Ohio State University; Ph.D., 1972, The Ohio State University. Organic Chemistry. Rearrangements to electron-deficient centers; synthesis of fluoro-substituted polycyclic aromatic hydrocarbons.

L.E. Fikes and H. Shechter, "Effects of Acid Strength on Schmidt Reactions of Alkyl Cyclopropyl Ketones," Tetrahedron Lett., 29, 2525 (1976).

L.E. Fikes and H. Schechter, "Effects of Acid Strength on Schmidt Reactions of Alkyl Cyclopropyl Ketones and Alkyl Phenyl Ketones," J. Org. Chem., 44, 741 (1979).

M.S. Newman, L.E. Fikes, et. al., "Synthesis and Carcinogenic Activity of 5-Fluoro-7-(oxygenated methyl)-12-methylbenz[a]anthracenes," J. Med. Chem., 21, 1076 (1978).

KNIGHT, J.A. (b. 1943) Assoc. Professor and Vice-President for Academic Affairs. A.B., 1965, Erskine College; Ph.D., 1969, University of North Carolina. Inorganic Chemistry. Boron-sulfur compounds and boron analogs of organic compounds.

LOWRY, BRIGHT A. (b. 1936) Professor and Chairman. B.S., 1958, Massachusetts Institute of Technology; Ph.D., 1963, University of Chicago. Physical Chemistry. Physical properties of liquid crystals.

Research Corporation, $13,600/two years.

NSF equipment, $24,900.

THOMAS, HOWARD E. (b. 1941) Assoc. Professor. B.Sc., 1962, University of Bristol, U.K.; Ph.D., 1969, University of Bristol. Physical Chemistry. Surface ehcmistry; the gas-solid interface.

FAIRFIELD UNIVERSITY
Fairfield, CT 06430

Fall 1980 ug enrollment 2867
Degrees offered B.S., B.A.
Telephone (203)255-5411

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 8 . 2. Support staff, FTE's: Sec'y 1 Stockrm 2 Technical 1
3. 1980 seniors & their placement: Total 13 Grad. school 7 Industry 4 Professional schools 2 Other 0 .
4. Senior majors, average past five years: 12 .
5. Undergraduates involved in research, average past five years:
   Academic year 8 Summer 3
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 18,186
2. Instrumentation:

NMR (P&E R-24, Varian A 60)	GC (P&E 800, P&E 880, F&M 810, Varian 3700)
MS (Varian EM 600, Bendix TOF)	LC (Waters)
UV-Vis (2-P&E 402)	DSC (P&E 1B)
AA (P&E 290B, P&E 303)	IR (P&E 283, P&E 237)

Custom Built Fluoresence & Phosphoresence Spectrometer

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 45 Computer literature search service? Yes Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 25 .

4. Computer facilities:
   Modified IBM 1500 with CRT in Chemistry Department.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   approximately $1000 student support 1979-80, about $500/yr. chemicals, equipment and glassware.
2. Departmental grants:
   General Electric $12,000.

3. Faculty teaching loads: Contact hours 12 Load credit for research? occasional

4. Sabbatical or leave support for research:
   50% of salary for full year
   100% of salary for ½ year
   Sabbatical eligibility is every 6th yr..

FACULTY PROFILE

BOGGIO, JOSEPH E., Professor. B.S. 1958, M.S. 1960, Ph.D. 1963, Worcester Polytechnic Institute, Physical Chemistry. Solid State Kinetics

J. E. Boggio, "The Room Temperature Oxidation of Cu(II)", J. Chem. Phys., 70, 5054, 1979.

ELDER, JOHN W., Professor, B.S. 1958, M.S. 1960, Ph.D. 1962, Loyola University, Chicago, Organic Chemistry, Natural Products.

H. F. Campbell, O. E. Edwards, J. W. Elder and R. J. Kolt, "Total Synthesis of DL-Anatoxin-a and DL-Tso anatoxin", Polish Journal of Chemistry, 53, 27 (1979).

J. W. Elder, P. Benveniste and P. Foneneau, "In Vitro Cyclisation of Squaline 2,3-eppxide to -Amyrin by Microsomes and from Bramble Cell Suspension Cultures", Phytochemistry, 16, 490 (1977).

J. W. Elder, *J. Abbruzzese, *J. Murray and *M. Zielski, "Separation of Paprika Pigments", J. Chem. Ed., 53, 43 (1976).

LISMAN, FREDERICK L., Associate Professor, B.S. 1960, Fairfield University, Ph.D. 1965 Purdue University. Physical Chemistry. Fission Process and Systematics of Fission Yields.

Grants Active 1978-80: NSF-LOCI, $14,500, "General Chemistry: Computer Assisted Instruction".

MAC DONALD, J. C., Professor, B.S. 1955, M.S. 1957 Boston College, Ph.D. 1962 University of Virginia, Analytical Chemistry. Application of Pattern Recognition Techniques to Analytical Chemistry.

MacDonald, J.C., Tellis, W. and Schurdak, J.J., "An Interfaced Multivendor Computer System", Amer. Lab., 8, (9), 63 (1976).

MacDonald, J.C., "Automated HPLC Systems: A Total Approach", Pharmaceutical Technology, 78,

O'CONNELL, EDMOND J., Jr., Professor, B.S. 1960 Providence College, Ph.D. 1964 Yale University, Organic Chemistry. Organic Photochemistry.

PULITO, ALDO M., Assistant Professor, B.S. 1942 Trinity College, Ph.D. 1950 University of Connecticut, Organic Chemistry. Organic Synthesis.

SARNESKI, JOSEPH E., Associate Professor, B.S. 1966 Kings College, Ph.D. 1971 Case Western Reserve University, Inorganic-Analytical. Synthesis of Novel Platinum (IV) Complexes.

Ten publications, 1976-80.

J.E. Sarneski, H.L. Surprenant and C.N. Reilley, "The Use of Protonation Induced Changes in Carbon^{13} NMR Chemical Shifts to Investigate the Solution Microscopic Structure of Partially Protonated Polybasic Molecules", Spectroscopy Letters, 9, 885 (1976).

SARNESKI, JOSEPH E., cont'd

C.N. Reilley and J.E. Sarneski, "The Determination of Proton-Binding Sites by NMR Titrations", in Analytical Chemistry - Essays in Memory of Anders Ringbom, E. Wanninen, ed., Pergamon Press, London, 1977.

J.E. Sarneski, A.T. McPhail, K.D. Onan, L.E. Erickson and C.N. Reilley, "Structural Characterization of a Novel Platinum(IV) Complex Produced by Deprotonation of Coordinated Amino Groups of the Rigid Ligand cis, cis-1,3,5-Triaminocyclohexane", J. Am. Chem. Soc., 99, 7376 (1977).

L.E. Erickson, J.E. Sarneski and C.N. Reilley, "Carbon^{13} NMR Studies of Platinum(II) Complexes, II. Chelate Ring Conformations and Internal Rotamer Distributions of Complexes of Methyl Substituted Glycines", Inorg. Chem., 17, 1701 (1978).

L.E. Erickson, J.E. Sarneski and C.N. Reilley, "Carbon^{13} NMR Studies of Platinum(II) Complexes III. An Investigation of the Configuration and Ligand Conformation of Complexes of the Cyclic α-Amino Acid Ligands, Proline and Pipecolic Acid", Inorg. Chem., 17, 1711 (1978).

Grant active, 1978-80, Research Corporation Cottrell College Science Grant, $10,000, "Effect of Coordinated Ligands on the Oxidation-Reduction Behavior of Platinum Complexes."

WEDDLE, GARY H., Assistant Professor. A.B. 1970, Thiel College, Ph.D. 1976, University of Delaware, Inorganic-Physical Chemistry. Gas Phase Kinetics and Mass Spectrometry.

G. H. Weddle, T. C. Rhyne and J. G. Dillard, The 24th Annual Conference on Mass Spectrometry and Allied Topics, p.520 (1976).

G. H. Weddle and P. Potzinger, 26th Annual Conference on Mass Spectrometry and Allied Topics, p. 250 (1978).

G. H. Weddle, D. P. Ridge, and F. F. Cali, 27th Annual Conference on Mass Spectrometry and Allied Topics, p. 18 (1979).

FRANKLIN AND MARSHALL COLLEGE
Lancaster, PA 17604

Fall 1980 ug enrollment 2075
Degrees offered BA
Telephone (717) 291-4123

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 9 . 2. Support staff, FTE's: Sec'y 1 Stockrm 1 Technical 0
3. 1980 seniors & their placement: Total 24 Grad. school 7 Industry 3 Professional schools 11 Other 3 .
4. Senior majors, average past five years: 30 .
5. Undergraduates involved in research, average past five years:
   Academic year 14 Summer 5
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 31,000
2. Instrumentation:

   NMR - 90MHz(P-E R-32)
   MS (Varian EM600)
   UV-Vis (P-E 402 and GCA/McPherson EU-700)
   High Pressure Lab Reactor (Parr-4560)
   AA (P-E 103)
   GC (P-E F11)
   LC (duPont 841)
   DSC (P-E DSC-1)
   IR (P-E 621 and 700)

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 32 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 18 .

4. Computer facilities: Department: minicomputer, Data General Nova 3 and Intercolor 8051 microcomputer/graphics videoterminal. Campus: Burroughs 6810

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   Approximately $5,000/yr chemicals and glassware; $5000-$7000/yr for equipment.

2. Departmental grants:

   Du Pont College Science Grant, $7,000; Dreyfus, $13,000.

3. Faculty teaching loads: Contact hours 13 Load credit for research? occasional

4. Sabbatical or leave support for research:

   Faculty can apply for sabbatical leave at 75% salary full year, full salary for one-half year. Frequency averages every 5th year.

FACULTY PROFILE

FARRELL, JOHN J. (b. 1937) Associate Professor. B.S., 1960, Baldwin-Wallace College, Ph.D., 1964, University of Pittsburgh. *Physical Chemistry* Temperature dependence of paramagnetic and antiferromagnetic materials.

F.A. Snavely, *J.E. Scott, *D. Richmand, and J.J. Farrell, "Magnetic Behavior of Copper(II) and Nickel(II) Derivatives of Substituted Benzeneazo-5-pyrazolones and -2,4-pentanedione," *J. Coord. Chem.*, *6*, 167(1977).

J.J. Farrell, "Physical and Chemical Properties of the Copper-Alanine System," *J. Chem. Educ.*, *54*, 445(1977).

HARRIS, DANIEL C. (b. 1948) Associate Professor. S.B., 1968, Massachusetts Institute of Technology, Ph.D., 1973, California Institute of Technology. *Biochemistry and Analytical Chemistry*. Structural and mechanistic studies of proteins of iron storage and transport.

Eleven publications, 1976-80.

D.C. Harris and *M.H. Gelb, "Binding of Xylenol Orange to Transferrin: Demonstration of Metal Anion Linkage," *Biochim. Biophys. Acta*, *623*, 1(1980).

*M.H. Gelb and D.C. Harris, "Correlation of Proton Release and Ultra-Violet Difference Spectra Associated with Metal Binding by Transferrin," *Arch. Biochem. Biophys.*, *200*, 93(1980).

D.C. Harris, "Iron Exchange Between Ferritin and Transferrin *In Vitro*," *Biochemistry*, *17*, 3071(1978).

R.C. Najarian, D.C. Harris and P. Aisen, "Oxalate and Spin-Labeled Oxalate as Probes of the Anion Binding Site of Human Transferrin. Metal-to-Anion Distance," *J. Biol. Chem.*, *253*, 38(1978).

D.C. Harris and M.D. Bertolucci, *SYMMETRY AND SPECTROSCOPY: An Introduction to Vibrational and Electronic Spectroscopy*, Oxford University Press, New York, 1978.

RICH, AUSTIN J. (b. 1930) Associate Professor. B.S., 1952, Bates College, M.S., 1955, Ph.D., 1960, Purdue University. *Organic Chemistry*. Synthesis and stereochemistry.

SCHREIBER, JERRY L. (b. 1946) Assistant Professor. B.S., 1968, University of Maryland, M.S., 1969, University of Wisconsin, Ph.D., 1973, University of Toronto. *Physical Chemistry*. Chemical dynamics of simple reactions.

J.C. Polanyi, J.L. Schreiber and W.J. Skrlac, "Distribution of Reaction Products (Theory) Part 12. Microscopic Branching in $H + XY \rightarrow HX + Y, HY + X$ (X,Y = Halogens)," *Faraday Disc. Chem. Soc.*, *67*, 66(1979).

J.C. Polanyi and J.L. Schreiber, "Test of the Information Theory of Branching Ratios by Classical Trajectory Computations," *Chem. Phys.*, *31*, 113(1978).

Grant Active: 1979 - 80, Research Corporation, $3,000.

SNAVELY, FRED A. (b. 1919) Professor. B.S., 1949, Franklin and Marshall College, Ph.D., 1952, Pennsylvania State University. *Inorganic Chemistry*. Coordination compounds; structure of arylazo compounds and formation constants of their metal derivatives, preparation of metal derivatives and relative bonding to O, N, and S.

SNAVELY, FRED A., cont'd

C.H. Yoder, *S. Kennedy, and F.A. Snavely, "Geometric Isomerism in the Phenylhydrazones of Some α-Dicarbonyl Compounds," J. Org. Chem., 43, 1077(1978).

F.A. Snavely, *J.E. Scott, *D. Richmand and J.J. Farrell, "Magnetic Behavior of Copper(II) and Nickel(II) Derivatives of Substituted Benzeneazo-5-pyrazolones and -2-4-pentanediones," J. Coord. Chem., 6, 167(1977).

SPENCER, JAMES N. (b. 1941) Associate Professor. B.S. 1963, Marshall University, Ph.D., 1967, Iowa State University. Physical Chemistry. Spectroscopy and calorimetry, hydrogen bond studies.

Seven publications, 1976-80.

J.N. Spencer, *R.C. Garrett, *F.J. Mayer, *J.E. Merkle, *C.R. Powell, *M.T. Tran and *S.K. Berger, "Amide Hydrogen Bonding in Organic Medium," Can. J. Chem., 58, 1372(1980).

J.N. Spencer, *R.C. Garrett, *F. Mayer, *M.L. Hackman, *J. Merkle, *S. Smith, *J.E. Gleim and *C.H. Blevins, "The NH Hydrogen Bond II," J. Phys. Chem., 83, 2615(1979).

J.N. Spencer, *R.C. Garrett, *F. Mayer, *J.E. Gleim and *C.H. Blevins, "Transfer Enthalpies and Enthalpies of Solution," J. Phys. Chem., 83, 1249(1979).

J.N. Spencer, *J.E. Gleim, *L.M. Hackman, *R.C. Garrett, *C.H. Blevins, "N-H···N and N-H···O Hydrogen Bonds," J. Phys. Chem., 82, 563(1978).

J.N. Spencer, *J.R. Sweigart, *M.E. Brown, *R.J. Bensing, *D.L. Housel, *G.W. Resisinger, *T.L. Hassinger, *W.H. Kelly, *D.S. Reifsnyder, *J.C. Peiper and *J.E. Gleim, "Solvation Effects on the Thermodynamics of Hydrogen Bonding III," J. Phys. Chem., 81, 2237(1977).

Grants Active: 1978-80, Petroleum Research Fund, $12,800, Studies of the hydrogen bond; 1980, Research Corporation, $5,067, purchase of instrumentation.

SUYDAM, FRED H. (b. 1923) Professor. B.S., 1946, Franklin and Marshall College, Ph.D., 1950, Northwestern University. Organic Synthesis.

C.H. Yoder, F.H. Suydam and F.A. Snavely, Chemistry, 2nd Ed., Harcourt Brace Jovanovich, Inc., New York, 1980.

F.H. Suydam, Study Guide to Chemistry, Harcourt Brace Jovanovich, Inc., New York, 1976.

VAN HORN, RUTH W. (b. 1918) Professor. B.A., 1939, M.A., 1940, University of California, Los Angeles, Ph.D., 1944, Pennsylvania State University. Organic Synthesis.

YODER, CLAUDE H. (b. 1940) Professor and Chairman. B.S., 1962, Franklin and Marshall College, Ph.D., 1966, Cornell University. Organometallic Chemistry. Structure of organometallic amides and amines, effects of structure on barriers to rotation in amides, substituent effects on carbon-13 proton coupling constants.

Thirteen publications, 1976-80.

C.M.S. Yoder and C.H. Yoder, "Correlations of Gas Phase Acidities and Basicities with the Electrostatic Field Model," J. Am. Chem. Soc., 102, 1245(1980).

YODER, CLAUDE H., cont'd

*R.W. Hillyard, *C.M. Ryan and C.H. Yoder, "The Structure of Some Amides Obtained from Chloromethyldimethylchlorosilane," J. Organometal. Chem., 153, 369 (1978).

*M.D. Wunderlich, *L.K. Leung, *J.A. Sandberg, *K.D. Meyer, and C.H. Yoder, "The Effect of Carbonyl Substituents on the Barriers to Rotation in N,N Dimethylamides," J. Am. Chem. Soc., 100, 1500(1978).

C.H. Yoder, "Teaching Ion-Ion, Ion-Dipole, and Dipole-Dipole Interactions," J. Chem. Educ., 54, 402(1977).

C.H. Yoder, *R.B. Pepinsky and *S. Nittolo, "The Preparation and Structure of Some Simple Trialkylstannylamides," J. Organometal. Chem., 129, 319(1977).

Grants Active: 1980, Research Corporation Cottrell College Science Grant, $5,000, The Reaction of Amides and Diamines with Ambidentate Substrates containing Elements of Group IV; Petroleum Research Fund, $13,000, Five-Coordinate Group IV Organometallic Amides and Diamines.

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FURMAN UNIVERSITY

Greenville, South Carolina

Fall 1980 ug enrollment 2400

Degrees offered B.S. M.S.

Telephone (803) 294-2056

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 7 . 2. Support staff, FTE's: Sec'y 1 Stockrm ____ Technical 1/2
3. 1980 seniors & their placement: Total 15 Grad. school 5 Industry 2 Professional schools 7 Other 1 .
4. Senior majors, average past five years: 16 .
5. Undergraduates involved in research, average past five years: Academic year 11 Summer 8
6. Master's program? yes Master's degrees conferred, average past five years: 2
7. National honors, undergraduate or senior majors, past five years:

   1976 - NSF Fellowship, John A. Roper
   1978 - NSF Fellowship, Thomas A. Stephenson

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 ~20,000
2. Instrumentation:

   NMR (Varian FT 80A, PE R20)
   IR (PE 580, 283, 298)
   UV VIS (Varian 118C, PE 552)
   Gas Chromatographs (Varian 3700, PE 3920)
   ESR (Varian E9)
   Bendix Time of Flight Mass Spectrometer
   Jarrell Ash Laser Raman 500
   Molectron N_2 Laser & Dye Laser
   PAR Electrochemical Apparatus
   PE 241 MC Polarimeter

3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 74 Computer literature search service? no Separate chemistry or science library? yes Librarian? no Standing orders for review series and annual reviews (past five years) 50 .

4. Computer facilities:

   University: HP 3000 Department: Interdata (Perkin Elmer) 6/16

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Not specifically designated: $3,000 - $4,000 per year.

2. Departmental grants:

   NSF ISEP $28,000 total 5 NSF 69A grants $115,000
   NSF LOCI $10,000 DuPont $7,000 Union Carbide $5,000
3. Faculty teaching loads: Contact hours ~ 8 Load credit for research? indirectly.

4. Sabbatical or leave support for research:

   Full year at half salary. Half year at full salary.

FACULTY PROFILE

ARRINGTON, CHARLES A., JR. (b. 1939) Professor and Chairman, B.S., 1960, Furman University, M.A., 1962, Ph.D. 1965, Harvard University. Physical Chemistry. Gas phase kinetics and atomic reactions in low temperature matrices.

D.E. Powers, C.A. Arrington, W.C. Harris, E. Block and V.F. Kalasinsky, "Infrared Spectra of Matrix-Isolated Sulfine", J. Phys. Chem., 83, (1979).

BONNY, ALAN (b. 1952) Assistant Professor. B.S., M.S. Hons., 1973, Ph.D., 1977, University of Waikato, New Zealand. Inorganic and Organometallic Chemistry. Homogeneous metal catalysis, metal cluster chemistry. Thirteen publications, 1976-1980.

A. Bonny, "Group IVB Derivatives of the Iron Triad Carbonyls", Coordination Chemistry Reviews, 25, 229-273 (1978).

A. Bonny, and K.M. Mackay, "Transition-metal Carbonyl Derivatives of the Germanes", Part 9. Reactions of Di(methylgermyl) tetracarbonyliron with some Covalent Halides, J. Chem. Soc., Dalton Trans., 1569-73 (1978).

A. Bonny, A.D. McMaster and S.R. Stobart, "Bis(methylcyclopentadienyl)germanium(II): Comparison of ^{13}C and ^{1}H NMR Properties with those for Homoleptic Tin(II) and Lead(II) Compounds and for Analogues Formed by Univalent Metals (Li, K, & Tl)", Inorganic Chemistry, 17, 935-38 (1978).

A. Bonny, and S.R. Stobart, "Stereochemically Non-Rigid Silanes, Germanes, and Stannanes", Part 4. Chiral Silylcyclopentadines: Evidence for a 1,2)1,5) Metallotropic Shift, J. Am. Chem. Soc., 101, 2247-49 (1979).

A. Bonny, J.R. Bowser, J.R. Pipal, and R.N. Grimes, "Nickel-Boron 'Hybrid' Clusters. Synthesis of Polyhedral Nickelaboranes and Nickelacarboranes from Small Borane and Carborane Anions. Crystal Structure of $(n^5\text{-}C_5H_5)_4Ni_4B_4H_4$", J. Am. Chem. Soc., 101, 6229-6236 (1979).

Grants active for 1980-82: Conoco-Research Corporation $17,500; ACS-PRFB $13,000; NSF Instrumentation Grant $17,000.

KANE-MAGUIRE, NOEL A.P. (b.1942) Associate Professor, B.S., 1962, B.S. with honors, 1963, Ph.D., 1969, University of Queensland, Australia. Inorganic Chemistry. Photochemical and thermal reactions of transition metal complexes. Eleven publications, 1976-1980.

N.A.P. Kane-Maguire, C.G. Toney, B. Swiger, A.W. Adamson and R.E. Wright, "Reversible Intermolecular Energy Transfer between Chromium (III) Complexes in Fluid Solution," Inorg. Chim. Acta., 22, L11 (1977).

N.A.P. Kane-Maguire, R.C. Kerr, and J.R. Walters, "Environmental Effects on the Phosphorescence Lifetime of Cr(III) Complexes," Inorg., Chim. Acta., 33, L163 (1979).

N.A.P. Kane-Maguire and J.S. Hallock, "Preparation and Resolution of Tris (2,2'-bipyridine) and Tris (1,10-phenanthroline) Complexes of Cr(III)," Inorg. Chim. Acta., 35, L309 (1979).

N.A.P. Kane-Maguire, G.M. Clonts, and R.C. Kerr, "Solid State Emission Lifetimes - Implications for Cr(III) Photochemistry," Inorg. Chim. Acta., 44, L157 (1980).

A. Heatherington, Su Min Oon, R. Vargas, and N.A.P. Kane-Maguire, "Acid Hydrolysis and Linkage Isomerism of the Cis-Dicyanobis(ethylenediamine) Chromium (III) ion," Inorg., Chim. Acta., 44, L279 (1980).

KNIGHT, LON B., JR. (b. 1944) Associate Professor. B.S., 1966, Mercer University, Ph.D., 1970, University of Florida. Physical Chemistry. High temperature reaction techniques and ESR spectroscopy.
Eleven publications, 1976-1980

L. B. Knight, R. L. Martin and E. R. Davidson, "ESR Matrix Isolation Investigation of the Aluminum Hydride Radical Cation-AlH^+", J. Chem. Phys., 71, 3991 (1979).

L. B. Knight, and M. B. Wise, "ESR Investigation of ScF_2 Isolated in Rare Gas Matrices at 12K", J. Chem. Phys., 71, 1578 (1979).

L. B. Knight, M. B. Wise, A. G. Childers, E. R. Davidson and W. R. Daasch, "The Generation and ESR Investigation of the BeF Radical in Rare Gas Matrices", J. Chem. Phys., (1980) In Press.

L. B. Knight, and M. B. Wise, "Generation and ESR Investigation of YF_2 and $Y(CN)_2$ Radicals in Rare Gas Matrices", J. Chem. Phys., (In Press).

L. B. Knight, M. B. Wise, and T. A. Fisher, "The Generation of $ScCl_2$, $ScBr_2$ and $Sc(CN)_2$ Radicals by Codeposition Reactions In Argon Matrices at 14K: An ESR Investigation", Inorg. Chem. (1980) In Press.

Grants active for 1979-82: NSF $110,000; 1980-81 NSF Equipment Grants $50,000; 1980-82 Research Corporation (Charles H. Towne Fund) $33,000.

KUBLER, DONALD G., (b. 1923) Professor. B.S., 1947, University of South Carolina, Ph.D., 1952, University of Maryland. Organic Chemistry. Chemistry of acetals and of α,β-unsaturated ethers, solution kinetics; arson analysis.

T. S. Davis, G. A. Gettys and D. G. Kubler, "Kinetic Salt Effects and Substituent Effects on Rates of Dimethyl Acetal Formation for Benzaldehydes", J. Org. Chem., 41, 2329 (1976).

*M. Allen, *C. Joyner, D. G. Kubler, *P. Wilcox, "The Dimerization of Isobutylene: A Student Experiment", J. Chem. Ed., 53, 175 (1976).

*B. Cox., D. G. Kubler and *C. A. Wilson, "Experiments with Electrophilic Aromatic Substitution Reactions", _J. Chem. Ed._, _54_, 379 (1977).

R. L. Finley, D. G. Kubler and R. A. McClelland, "Stopped Flow Trapping of the Hemiacetal Intermediates of the Hydrolysis of Acetals", _J. Org. Chem._, 45, 644 (1980).

D. G. Kubler, "Gas Chromatography/Fourier Transform Infrared Spectroscopy: Potential Application for Forensic Science", _Arson Anal. Newsl._, _4_, no. 211 (1980).

PATTERSON, CHARLES STUART (b. 1930) Professor. B. S., 1950, Furman University, M. S. Ph.D., 1955, University of North Carolina. _Physical Inorganic Chemistry_. The Nature of Solutions.

TASSIN, JEFFREY D. (b. 1952) Assistant Professor. B.A., 1974, Adelphi University; Ph.D., 1979, Georgia Institute of Technology. _Physical Chemistry_, _Biochemistry_. Photochemistry of Proteins Peptides and Amino Acids.

R. F. Borkman, J. D. Tassin, and S. Lerman, "Fluorescence Lifetimes of Ocular Lens Chromophores"; _Photochemistry and Photobiology_, _31_, 519-521 (1980).

J. D. Tassin and R. F. Borkman, "The Photolysis Rates of Some Di- and Tripeptides of Tryptopan", _Photochemistry and Photobiology_, _32_, 577-585 (1980).

R. F. Borkman, J. D. Tassin, and S. Lerman, "Fluorescence Lifetimes of Chromophores in Intact Human Lenses and Lens Proteins", _Exp. Eye Research_, In Press.

R. F. Borkman, J. D. Tassin, and S. Lerman, "The Rates of Photodestruction of Tryptophan Residues in Human and Bovine Ocular Lens Proteins", _Exp. Eye Research_, In Press.

Grants active for 1980-82: Research Corporation Cottrell College Science Grant, $13,000.

TRZUPEK, LARRY S. (b. 1948) Assistant Professor. B.S., 1970, Loyola University, Ph.D., 1974, Massachusetts Institute of Technology. _Organic Chemistry_, _Biochemistry_. Peptide chemistry; organometallics, carbonions.

L. S. Trzupek, A. Go, and D. K. Kopple, "Hexafluoro-2-propyl Esters in Peptide Synthesis", _J. Org. Chem._, _44_, 4577 (1979).

Grants active for 1980-81: Research Corporation CCSP Grant, $15,700.

GETTYSBURG COLLEGE
Gettysburg, PA 17325

Fall 1980 ug enrollment 1937
Degrees offered A.B.
Telephone 717-334-3131

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 7 . 2. Support staff, FTE's: Sec'y 1 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 14 Grad. school 4 Industry 1 Professional schools 3 Other 6 .
4. Senior majors, average past five years: 9 .
5. Undergraduates involved in research, average past five years:
   Academic year 6 Summer 4
6. Master's program? No Master's degrees conferred, average past five years: None
7. National honors, undergraduate or senior majors, past five years:

   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 20,064
2. Instrumentation:

   NMR, 60 MHz (Varian T-60)
   MS (Varian EM-600 and Bendix TOF 12-100)
   IR (P-E 21 and 735)
   UV-VIS (P-E 552)
   Cyclic Voltammeter
   GC (Aerograph A-90-P)
   Polarimeter (Rudolph 62)
   Dipolmeter (WTW DM01)
   Medium Pressure Hydrogenator (Parr 4501)
   Gouy Balance

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 27 Computer literature search service? No Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 16 .

4. Computer facilities: Campus -- Burroughs 6700; Department -- Two terminals

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: No specific college budget; approximately $2500 spent on research from Supplies and Materials budget. Also, $4000 contributed by chemistry alumni for project work.
2. Departmental grants: Du Pont College Science Grant, $7,000
   NSF-URP, $12,000

3. Faculty teaching loads: Contact hours 13 Load credit for research? No .

4. Sabbatical or leave support for research: Faculty may be awarded sabbatical leaves for one-half year (including January term) at full pay or for entire academic year at one-half salary. Eligible every seventh year.

FACULTY PROFILE

DE HOFF, BRADLEY S. (b. 1958) Assistant Instructor. A.B., 1980, Gettysburg College. Organic and Physical Chemistry.

FORTNUM, DONALD H. (b. 1932) Professor. B.S., Carroll College (WI), Ph.D., 1958, Brown University. Physical Chemistry. Transition metal complexes, Thermal analysis, Computer graphics.

GRZYBOWSKI, JOSEPH J. (b. 1950) Assistant Professor. B.S., 1972, King's College (PA), Ph.D., 1978, Case Western Reserve University. Inorganic and Analytical Chemistry. Electrochemistry of metal-nicotinamide complexes and electrocatalytic reactions involving transition metal mediators.

J. J. Grzybowski and F. L. Urbach, Binuclear Metal Complexes. II. A Unique Mononuclear Copper(I) Complex with a Potentially Binucleating Schiff Base Ligand, Inorg. Chem., 19, 2064 (1980).

J. J. Grzybowski, P. H. Merrell, and F. L. Urbach, Binuclear Metal Complexes. I. Dicopper(II) Complexes with Binucleating Ligands Derived from 2-Hydroxy-5-methyl-isophthalaldehyde and 2-(2'-Aminoethyl)pyridine or Histamine, Inorg. Chem., 17, 3078 (1978).

HATHAWAY, SUSAN J. (b. 1950) Assistant Professor. B.A., 1971 and M.A., 1973, SUNY at Potsdam, Ph.D., 1978, University of New Hampshire. Organic Chemistry. Asymmetric homogeneous hydrogenation.

J. D. Morrison, W. F. Masler, and S. Hathaway, chapter on Asymmetric Homogeneous Hydrogenation with Chiral Rhodium-Phosphine Catalysts in CATALYSIS IN ORGANIC SYNTHESES 1976, P. N. Rylander and H. Greenfield, editors, Academic Press, N.Y., 1976, pp. 203-233.

JACKSON, LILLIAN S. (b. 1924) Assistant Instructor. B.A., 1946, Wheaton College (MA), M.A., 1947, Bryn Mawr College. General Chemistry.

PARKER, WILLIAM E. (b. 1940) Associate Professor. B.A., 1962, Haverford College, M.S., 1965 and Ph.D., 1967, The University of North Carolina at Chapel Hill. Inorganic Chemistry. Coordination chemistry; kinetics of reaction of polynuclear cobalt complexes.

ROWLAND, ALEX T. (b. 1931) Professor and Chairman. A.B., 1953, Gettysburg College, Ph.D., 1958, Brown University. Organic Chemistry. Stereochemistry and conformations of highly substituted cyclohexanones.

A. T. Rowland, *R. S. Drawbaugh, and *J. R. Dalton, Steroid Oxetanones. 3. Synthesis of 5,7α-Epoxy-5α-cholestan-6-ones, J. Org. Chem., 42, 487 (1977).

A. T. Rowland, The Boiling Tube, J. Chem. Educ., 53, 802 (1976).

GRINNELL COLLEGE
Grinnell, Iowa 50112

Fall 1980 ug enrollment 1225
Degrees offered BA
Telephone 515/236-6181

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 6 . 2. Support staff, FTE's: Sec'y 2/3 Stockrm 3/4 Technical 1
3. 1980 seniors & their placement: Total 26 Grad. school 6 Industry 4 Professional schools 11 Other 5 .
4. Senior majors, average past five years: 19 .
5. Undergraduates involved in research, average past five years:
   Academic year 8 Summer 8
6. Master's program? no Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   1978 - Rhodes Scholarship (Susan Duffey)

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 20,000
2. Instrumentation:

nmr- Perkin Elmer R12B
ir- Beckman AccuLab 1
Beckman IR20A
spectrofluorimeter- Aminco Bowman

uv-vis- Beckman DB-G
Beckman 5260
gc- Hewlett-Pack 5750
lc- Altex 310

electrochem- PAS 172,174,175
x-ray- Philips PW1008/80
aa- Perkin Elmer 103

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 46 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 17 .

4. Computer facilities: Department: two DEC LA-36 Decwriter terminals, two DEC VT50CRT terminals

   Campus: DEC 11/70 time sharing system

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   About $3000/yr for locally administered research funds

2. Departmental grants:

NSF-URP, $9,750	General Electric, $4,000
NSF-LOCI, $14,866	NSF-69A, $24,950

3. Faculty teaching loads: Contact hours 12 Load credit for research? No .

4. Sabbatical or leave support for research: sabbatical leave every 7 years; full year at 1/2 salary or 1-semester at full salary.

FACULTY PROFILE

DANFORTH, JOSEPH D. (b. 1912) Professor A.B. 1934 Wabash College, Ph.D. 1938 Purdue University. Inorganic Chemistry. Structure and reactions of cracking catalysts, kinetics of thermal decomposition of polymers and inorganic solids.

ERICKSON, LUTHER E. (b. 1933) Professor and chairman B.A. 1955 St. Olaf College, Ph.D. 1959 University of Wisconsin. Physical Chemistry. Magnetic resonance spectroscopy, stereochemistry of coordination compounds. Six publications 1975-1980.

L. E. Erickson and *W. F. Hahne, Stereochemistry of the Reaction of Dimethylsulfoxide with Dichloroglycinatoplatinate(II) and Similar Amino Acids, Inorg. Chem., 15 2941 (1976).

J. E. Sarneski, A. T. McPhail, K. D. Onan, L. E. Erickson, and C. N. Reilley, Structural Characterization of a Novel Platinum(IV) Complex Produced by Deprotonation of Coordinated Amino Groups of the Rigid Ligand cis,cis-1,3,5-Triaminocyclohexane, J. Am. Chem. Soc., 99, 7376 (1977).

L. E. Erickson, J. E. Sarneski, and C. N. Reilley, Carbon-13 NMR Studies of Platinum(II) Complexes. 2. Chelate Ring Conformations and Internal Rotamer Distributions of Complexes of Methyl-Substituted Glycines, Inorg. Chem., 17, 1701 (1978).

L. E. Erickson, J. E. Sarneski, and C. N. Reilley, Carbon-13 NMR Studies of Platinum (II) Complexes. 3. Investigation of the Configuration and Ligand Conformation of Complexes of the Cyclic α-Amino Acids Proline and Pipecolic Acid, Inorg. Chem., 17, 1711 (1978).

J. E. Sarnaski, L. E. Erickson, and C. N. Reilley, Additive Multipath Coupling between Platinum and Carbon in the Framework of Small Ring Systems, J. Mag. Res., 37, 155 (1980).

Grants active: Research Corp., 1980-82, $6,500 - Structural and Kinetic Studies of Platinum Complexes of Amino Acids and π-Donor Ligands.

GURIRA, ROGERS C. (b. 1942) Assistant Professor B.S. Central State University, Ph.D. 1973 Pennsylvania State University. Analytical Chemistry. Rates of electron transfer in heme proteins, electrochemistry of simple heme complexes, mechanisms of electron transfer processes in metal complexes.

*D. Hoft, *J. Oxman and R. C. Gurira, Direct Determination of Phosphorus in Fertilizers by Atomic Absorption Spectroscopy, Ag. and Food Chem., 27, 145 (1979).

PIPAL, ROBERT J. (b. 1945) Assistant Professor B.S. 1967 Iowa State University, Ph.D. 1971 Massachusetts Institute of Technology. Inorganic Chemistry. X-ray crystallography of inorganic and organometallic compounds, electrochemistry of cluster compounds. Fourteen Publications 1975-1980.

Russell N. Grimes, Ekk Sinn, and J. Robert Pipal, Tetracarbon Metallacarboranes. 9.[1] New Types of Nido Cage Geometry. Crystal and Molecular Structures of $(C_6H_5)_2$-PCH_2 ${}_2Ni(CH_3)_4C_4B_8H_8$ (Isomer 1) and $(\eta^5-C_5H_5)Co(CH_3)_4C_4B_7H_7$(Isomer 2), Inorganic Chemistry, 19, 2087 (1980).

James R. Bowser, Alan Bonny, J. Robert Pipal, and Russell Grimes, Nickel-Boron "Hybrid" Clusters. Synthesis of Polyhedral Nickelaboranes and Nickelacarboranes from Small Borane and Carborane Anions. Crystal Structure of $(\eta^5-C_5H_5)_4Ni_4B_4H_4$, Journal of the American Chemical Society, 101, 6229 (1979).

Russell N. Grimes, J. Robert Pipal, and Ekk Sinn, Structure of a 12-vertex Arachno Carborane, $\sigma-(\eta^5-C_5H_5)Co(\eta^5-C_5H_4)^+ - (CH_3)_4C_4B_8H_8^-$, an Analogue of $B_{12}H_{12}^{6-}$ and $C_2B_{10}H_{12}^{4-}$. Mechanisms of Carborane Fluxional Behavior and Metallocarborane Formation from the $(CH_3)_4C_4B_8H_8^-$, an Analogue of $B_{12}H_{12}^{6-}$ and $C_2B_{10}H_{12}^{4-}$. Mechanisms of Carborane Fluxional Behavior and Metallocarborane Formation from the $(CH_3)_4C_4B_8H_8^{2-}$-Ion, Journal of the American Chemical Society, 101, 4172 (1979).

PIPAL, ROBERT J., cont'd

J. Robert Pipal and Russell N. Grimes, Tetracarbon Metallocarboranes. 6. Stereochemical Relationships between $Co_2C_4B_6$ Cage Isomers Formed by Oxidative Fusion. Crystal Structure of $(\eta^5\text{-}C_5H_5)_2Co_2(CH_3)_4C_4B_6H_6$, Isomer V., Inorganic Chemistry, 18 1936 (1979).

J. Robert Pipal and Russell N. Grimes, Crystal and Molecular Structure of an Iron Dihydrogen Metallocarborane, $\{2,3\text{-}(CH_3)_2C_2B_4H_4\}_2FeH_2$. Steric Aspects of the Oxidative Fusion Process., Inorganic Chemistry, 18, 263 (1979).

SWARTZ, JIM E. (b 1951) Assistant Professor B.S. 1973 Stanislaus State College, Ph.D. 1978 University of California at Santa Cruz. Organic Chemistry. Mechanistic and electrochemical studies of $S_{RN}1$ nucleophilic substitution reactions, fragmentation reactions of organic radical anions.

J. E. Swartz and J. F. Bunnett, "Reactions of Potassium Diphenylphosphide with Halotoluenes. Evidence for a Thermally Induced $S_{RN}1$ Reaction." J. Org. Chem., 44, 340 (1979).

J. E. Swartz and J. F. Bunnett, "$S_{RN}1$ Reactions of Some Phosphorus Nucleophiles with Iodo- and Bromobenzene." J. Org. Chem., 44, 4673 (1979).

J. E. Swartz and F. C. Anson, "A Comparison of the Staircase Voltammetric and Polarographic Responses of Pyrazine and Several Substituted Pyrazines in Aqueous Acid." J. Electroanal. Chem., in press.

J. E. Swartz and F. C. Anson, "Electrochemical Responses of the Intensely Green Complexes Formed by the Reaction of Cr^{2+} with Pyrazine ("Pyrazine Green"), Pyrazinecarboxamide and Pyrazinecarboxylic Acid." Inorg. Chem., in press.

UHLENHOPP, ELLIOTT L. (b. 1942) Assistant Professor B.A. 1965 Carleton College, Ph.D. 1971 Columbia University. Biochemistry. Nucleic acid chemistry, physical biochemistry, viscoelastic measurement of high molecular weight DNA Solutions.

*J. B. Williams, E. W. Fleck, *L. E. Hillier and E. Uhlenhopp, Viscoelastic Studies of Tetrahymena Macronuclear DNA, Proc. Natl. Acad. Sci., 75, (1978).

Grants Active: Research Corp., 1978-79, $7,000, Viscoelastic Analysis of Tetrahymena DNA.

WUBBELS, GENE G. (4. 1942) Professor B.S. 1974 Hamline University, Ph.D. 1968 Northwestern University. Organic Chemistry. Photochemistry, mechanisms of photoreactions of aromatic molecules, catalysis of photoreactions, electron transfer reactions. Seven publications 1976-80.

G. G. Wubbels, *W. J. Monaco, *D. E. Johnson, and *R. S. Meredith, Ammonia-Catalyzed Photoaddition of t-Butyl Alcohol to 9,10-Anthraquinone. Electron Transfer Catalysis of a Photochemical Hydrogen Abstraction Reaction, J. Am. Chem. Soc., 98, 1036 (1976).

A. Padwa, T. Brookhart, D. Dehm, G. West, and G. Wubbels, Solvent Control of Migratory Aptitudes in the Photochemical Rearrangement of 2(5H)-Furanones, J. Am. Chem. Soc., 99, 2347 (1977).

A. Padwa, T. Brookhart, D. Dehm and G. Wubbels, Migratory Aptitude Studies in the Photochemical Rearrangement of 2(5H)-Furanones, J. Am. Chem. Soc., 100, 8247 (1978).

G. G. Wubbels, A. H. Halverson*, and J. D. Oxman*, Thermal and Photochemical Smiles Rearrangements of β-(Nitrophenoxy)-ethylamines, J. Am. Chem. Soc., 102 4848 (1980).

J. C. Scaiano and G. G. Wubbels, Photosensitized Dissociation of t-Butyl Peroxide. Energy Transfer to a Repulsive State, J. Am. Chem. Soc., in press.

Grants Active: ACS-PRF, 1980-82, $13,000 - Catalysis of Photochemical Reactions.

HAMILTON COLLEGE
Clinton, NY 13323

Fall 1980 ug enrollment 1600
Degrees offered AB
Telephone (315)-859-7606

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 4 . 2. Support staff, FTE's: Sec'y 0.5 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 9 Grad. school 4 Industry 0
   Professional schools 3 Other 2 .
4. Senior majors, average past five years: 8 .
5. Undergraduates involved in research, average past five years:
   Academic year 1-2/yr Summer < 1 per summer
6. Master's program? N Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:
   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 17,000
2. Instrumentation:
   NMR (Varian T-60 with Var. Temp.)
   UV-VIS (PE 202. PE 552)
   IR (PE 467)
   AA (PE 305)
   LC (Waters 3000)
   Polarograph (PAR Module 174)
   GC (PE 3920)
   MS (Finnegan 400 Quadrupole with Vacuum system)
   2 Admittance Bridges (Cole Gross, GR 1615A)

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 31 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? Yes Standing orders for review series and annual reviews (past five years) 21 .

4. Computer facilities: Department: Hewlett Packard 9825 Desk top computer Campus: Three Terak Microcomputer systems, with two printers; TRS-80; six terminals connected to IBM 370/168 with remote job entry.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   About $3000

2. Departmental grants:
   General Electric 15,000 (3 yr).

3. Faculty teaching loads: Contact hours 12-15 Load credit for research? No .

4. Sabbatical or leave support for research: One half salary for a year full salary for a semester. Available upon application, hence frequency varies, average about 1 every seven years.

FACULTY PROFILE

DENNEY, DONALD J. (b. 1920). Professor. B.S., 1950, University of Pennsylvania, Ph.D., 1954 Brown University. Physical Chemistry. Dielectric and flow properties of liquids.

CRATTY, LELAND EARL, JR. (b. 1930) Professor. B.S., 1952, Beloit College, Ph.D., 1957, Brown University. Inorganic/Physical Chemistry. Adsorption rates; catalysis by metallic clusters.

KINNEL, ROBIN B. (b. 1937) Professor. A.B., 1959, Harvard, Ph.D. 1965, M.I.T. Organic Chemistry. Structure proof and synthesis of marine natural products, medium-sized ring chemistry, strained ring chemistry.

R. B. Kinnel, A. J. Duggan, T. Eisner, J. Meinwald and I. Miura, "Panacene: An Araomatic Bromoallene from a Sea Hare (Aplysia brasiliana)," Tetrahedron Letters, 1977, 3913.

R. K. Dieter, R. B. Kinnel, J. Meinwald, and T. Eisner, "Brasudol and Isobrasudol: Two Bromo - Sesquiterpenes from a Sea Hare," Tetrahedron Letters, 1979 (19), 1645-1648.

R. B. Kinnel, R. K. Dieter, J. Meinwald, D. van Engen, J. Clardy, T. Eisner, M. O. Stallard and W. Fenical, "Brasilenyne and cis - Dihydrorhodophytin: Antifeedant Medium-Ring Halo-ethers from a Sea Hare (Aplysia brasiliana)," Proceedings of the National Academy of Sciences, 76(8), 3576-9 (1979).

YOURTEE, LAWRENCE K. (b. 1917). Professor and Chairman, B.S., 1937, Washington College, M.S., 1939, Georgia Institute of Technology, Ph.D., 1948, University of Texas(Austin). Organic Chemistry.

HAMLINE UNIVERSITY

Saint Paul, MN., 55104

Fall 1980 ug enrollment 1300

Degrees offered B.A.

Telephone (612) 641-2800

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 4 . 2. Support staff, FTE's: Sec'y $\frac{1}{4}$ Stockrm $\frac{3}{4}$ Technical 0
3. 1980 seniors & their placement: Total 7 Grad. school 2 Industry 2 Professional schools 2 Other 1 .
4. Senior majors, average past five years: 10 .
5. Undergraduates involved in research, average past five years:
   Academic year 8 Summer 3
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   1978 Lawrence H. Merwin, Fulbright Scholarship

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 10,000
2. Instrumentation:

   NMR (Varian A-60A)
   AA (Beckman 448)
   IR (Beckman IR-12)

   GC (Varian 90-P)
   UV-Vis (Cary 219)
   SPF (Aminco-Bowman)
   MC (Home made)
   ES (Baird Atomic)
   HPLC (LDC Cheminert)

3. Library resources: CA? Yes Volume indices? No Collected indices? No Total journal subscriptions? 15 Computer literature search service? Yes Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) No .

4. Computer facilities:

   Department; minicomputer PDP 1123, graphic computer.
   Campus; Control Data 7700 Computer.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   Approximately $3,000/yr. chemicals, glassware, and travel expenses.

2. Departmental grants:

   None presently active.

3. Faculty teaching loads: Contact hours 14 Load credit for research? Yes .

4. Sabbatical or leave support for research:

   Faculty can apply for sabbatical leave at 50% salary full year, full salary for 1/2 year. Frequency averages every 7th year.

FACULTY PROFILE

COPES, JANE SNELL. (b. 1948) Assistant Professor, B.A., 1970, Illinois Wesleyan University, Ph.D., 1976, Syracuse University. Inorganic and Physical Chemistry. Transition metal complex preparation and kinetics, metalloporphyrin studies in nonaqueous media; cognitive development in chemical education.

J.S. Copes, Hands-On Chemistry, Random House, 1980.

CRESWELL, CLIFFORD J. (b. 1936) Professor and Chairman, B.S., 1958, Franklin and Marshall College, Ph.D., 1962, Northwestern University. Physical Chemistry. Effects of structure on barriers to rotation, line shape analysis in n.m.r., molecular dynamics of palladium, platinum and ruthenium complexes, thermodynamics of weakly interacting systems.

C.J. Creswell, A. Dobson, D.S. Moore, and S.D. Robinson, "Complexes of the Platinum Metals. 17. Molecular Dynamics of the Species $[M(O_2CR)_2(CO)(PPh_3)_2]$ (M = Ru, R = Me, CF_3, C_2F_5, C_6F_5; M = Os, R = Me, CF_3)", J. Inorganic Chem., 18, 2055 (1979).

OLSEN, RODNEY L. (b. 1936) Professor, B.A., 1958, University of Minnesota, Duluth, M.S., 1960, Ph.D., 1962, Iowa State University. Analytical Chemistry. Fluorescence spectra of alkaline earth complexes of o,o'-dihydroxyazobenzene and related compounds; trace analysis for metals; computer interfacing analytical instruments.

R.F. Derr, R.L. Olsen and L. Zieve, "Separation of ^{32}P-Labeled Inorganic Phosphate from Rat Liver Homogenates", Anal. Biochem., 77, 548 (1977).

L. Zieve and R.L. Olsen, "Can hepatic coma be caused by a reduction of brain noradrenaline or dopamine?", Gut, 18, 688 (1977).

Grant active 1980-82: NSF LOCI Grant, $8175, Development of Laboratory Experiments to Introduce Computer Interfacing in Chemistry.

RUNQUIST, OLAF A. (b. 1931) Professor, B.S., 1952, Iowa State University, Ph.D., 1956, University of Minnesota, Minneapolis. Organic Chemistry. Structure and reactions of natural products, kinetic analysis of biological reactions.

N.L. Meryhew and O.A. Runquist, "A Kinetic Analysis of Immune Medicated Clearance of Erythrocytes", J. Immunology, accepted for publication October 1980.

O.A. Runquist, "Programmed Independent Study, Laboratory Technique Course for General Chemistry", J. Chem. Ed., 56, 616 (1979).

J.W. Eaton, E. Berger, D. Nelson, J.G. White and O.A. Runquist, Intracellular Calcium: Lack of Effecton Ovine Red Cells (40086), Pro. Soc. Exp. Biol. & Med., 157, 406-510 (1978).

HAMPDEN-SYDNEY COLLEGE
Hampden-Sydney, VA 23943

Fall 1980 ug enrollment 732
Degrees offered BS
Telephone (804)223-4381

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 4 . 2. Support staff, FTE's: Sec'y 0.4 Stockrm 0.5 Technical 0.5
3. 1980 seniors & their placement: Total 10 Grad. school 2 Industry 5 Professional schools 3 Other ______.
4. Senior majors, average past five years: 10 .
5. Undergraduates involved in research, average past five years: Academic year 20 Summer 5
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years: N/A

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 14,000
2. Instrumentation:

NMR (PE-R24A and Varian A60A)
MS (EA Quad 250)
GC (6, various mfgr.)
ESR (Varian-V-4500)
IR (PE-21 and two PE-137)
Gouy Balance (0.01 mg)
UV-Visible (B&L 505 and Beckman DK-2)
Polarograph (Sargent XV)
Powder X-Ray Unit (GE)
Dry Box, Stainless Steel

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 34 Computer literature search service? No Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 20 .

4. Computer facilities: Campus: Perkin-Elmer 3242. Department: PE-1100 terminal with 650 and 655 printers and 350 VDU graphics for campus computer; DEC LS-11 with CRT, printer, and data acquisition system.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: $5,000/year for supplies and chemicals for research; about $4,500/year for summer research stipends for faculty/students.

2. Departmental grants: NSF-ISEP, $13,500.

3. Faculty teaching loads: Contact hours 12 Load credit for research? No

4. Sabbatical or leave support for research: After six years of service, full salary for one-half year or half salary for full year. Frequency averages eight years.

FACULTY PROFILE

PORTERFIELD, WILLIAM W. (b. 1936) Professor. B.S., 1957, University of North Carolina, M.S., 1960, California Institute of Technology, Ph.D., 1962, University of North Carolina. Inorganic Chemistry. Room-temperature molten salts, optical basicity parameters, vibrational spectroscopy.

W. W. Porterfield and J. T. Yoke, "Room Temperature Fused Salts: Liquid Chlorocuprates(I)," Advances in Chemistry, 150, American Chemical Society, Washington, D. C., 1976.

SIPE, HERBERT J., JR. (b. 1940) Associate Professor. B.S., 1961, Juniata College, Ph.D., 1969, University of Wisconsin (Madison). Physical Chemistry. Bonding in organosilicon and related compounds; esr spectroscopy.

H. J. Sipe, Jr., "Real Techniques for Real Problems," in "Guide to Effective Teaching," J. Stableski, Ed., Change Magazine Press, New Rochelle, N. Y., 1978, p. 166.

H. J. Sipe, Jr. and J. Y. Corey, "Esr Studies of Radical Anions of Group IV Dibenzo[b,f]-Metallepins," J. Organometal. Chem., 120, 195 (1976).

H. J. Sipe, Jr., "The Real World in Miniature," Change Magazine, 8, No. 2 (1976).

SMITH, HOMER A., JR. (b. 1932) Professor and Chairman. B.A., 1953, Rice University, Ph.D., 1961, Oklahoma State University. Organic Chemistry. Syntheses and reactions involving organometallic intermediates; medicinal chemistry.

H. A. Smith, Jr. and E. Campaigne, "3-Methyl-5-hydroxybenzo[b]thiophene," Heterocyclic Preparations, in press.

T. Choo, H. A. Smith, and D. Caine, "Enone-Reduction-Enolate Alkylation Sequence: 2-Allyl-3-methylcyclohexanone," Organic Syntheses, 56, 52 (1977).

H. A. Smith, Jr., "The Evolution of a Self-Paced Organic Chemistry Course," J. Chem. Educ., 53, 510 (1976).

THOMPSON, DOUGLAS S. (b. 1939) Associate Professor. B.S., 1961, University of California (Berkeley); Ph.D., 1965, Massachusetts Institute of Technology. Analytical and Biophysical Chemistry. Polymer Characterization; physical chemistry of phospholipid bilayer vesicles.

D. S. Thompson and R. L. Jernigan, "Molecular Electro-optics of Flexible Polymers," in Molecular Electro-optics, C. T. O'Konski, Ed., Marcel Dekker Publishing Co., N. Y., 1976.

D. S. Thompson, Spectrophotometric formaldehyde-copper monitor. U.S. 3, 951, 602 (patent issued April 20, 1976).

HARVEY MUDD COLLEGE
Claremont, CA - 91711

Fall 1980 ug enrollment 480
Degrees offered B. Sc.
Telephone (714) 621-8092

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 8 . 2. Support staff, FTE's: Sec'y 1 Stockrm 1 Technical 3
3. 1980 seniors & their placement: Total 16 Grad. school 9 Industry 6 Professional schools - Other 1 .
4. Senior majors, average past five years: 16 .
5. Undergraduates involved in research, average past five years:
   Academic year 16 Summer 12
6. Master's program? No Master's degrees conferred, average past five years: -
7. National honors, undergraduate or senior majors, past five years:
   NSF: 1978-Ken Feldman; 1979-Tom Chappell, Larry Perez; 1980 Phil Szuromi.
   Rhodes: 1980-A.J. Shaka ; Watson: 1976-Keith Woo
   Hertz: 1978-Ken Feldman

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 19,000
2. Instrumentation:
   Finnegan 320 Mass Spec GC; Varian EM 360LNMR; Varian - Cary Models 219, 16, 580 V -UV; Perkin Elmer 137, 237, 621 IR; Picker Automatic X-ray Diffraction; Perkin Elmer 305B AA, 141 Polarimeter; Beckman LS 9000 Liq. Scint. Counter; Sorvall RC2 Centrifuge.
3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 210 Computer literature search service? No Separate chemistry or science library? Yes Librarian? Yes Standing orders for review series and annual reviews (past five years) 55 .
4. Computer facilities: Data General Nova 2 Minicomputer in department, Digital Equipment Corp. VAX 11/780 in college with various types of ports.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: About $25,000/yr. for chemistry (above general departmental budgets)
2. Departmental grants: Dreyfus $8000, duPont $7500, NSF Research Equipment $25,000.
3. Faculty teaching loads: Contact hours 10-13 Load credit for research? No, evenly distributed.
4. Sabbatical or leave support for research:
   80% Salary every seventh year for full year sabbatical (all are taken)
   Leaves granted if requested (3 granted in last three years for 2 mo., 6 mo., full year).

FACULTY PROFILE

CAMPBELL, J. ARTHUR (b. 1916) Seeley W. Mudd Professor and Chairman. A.B., 1938, Oberlin College; M.S., 1939, Purdue University; Ph.D., 1942, University of California-Berkeley. Structural Chemistry, Thermodynamics.

Seven publications since 1976.

J. A. Campbell, Chemistry, the Unending Frontier, Goodyear Publishing Co. (1978).

J. A. Campbell and Barbara Burke, Chemistry Experiments for the Laboratory, Goodyear Publishing Co. (1978).

J. A. Campbell, Paradigms and Paradoxes, J. Chem. Ed. 57 41 (1980).

J. A. Campbell, Reversibility and Returnability, J. Chem. Ed. 57 345 (1980).

DAUB, G. WILLIAM (b. 1950) Assistant Professor. B.A., 1972, Pomona College, Ph.D., 1977, Stanford University. Organic Chemistry. The development and application of new reactions in organic synthesis, and the study of the regioselectivity of synthetic reactions.

G. W. Daub and E. E. van Tamelen, "Synthesis of Oligoribonucleotides Based on the Facile Cleavage of Methyl Phosphotriester Intermediates", J. Am. Chem. Soc., 99, 3526 (1977).

G. W. Daub, "Oxidatively Induced Cleavages of Transition Metal-Carbon Bonds", Progress in Inorganic Chemistry, 22, 409 (1977), John Wiley & Sons.

Grant Active 1979-1982: Research Corporation Cotrell College Science Grant, $14,800, Diels-Alder Approaches to Spiro-Substituted Carbocycles.

KOK, GREGORY L. (b. 1947) Associate Professor. B.S., 1969, Calvin College; Ph.D., 1973, University of Michigan. Atmospheric Chemistry.

Eight publications since 1976.

D. H. Stedman, G. L. Kok, R. Delumyea, and H. Alvord, "Redundant Calibration of NO, CO, NO_2 and O_3 Air Pollution Monitors by Chemical and Gravimetric Techniques, ASTM Special Technical Publication 598, 33 (1976).

G. L. Kok, *T. P. Holler, *M. B. Lopez, *H. A. Nachtrieb and *M. Yuan, "Chemiluminescent Method for the Determination of Hydrogen Peroxide in the Ambient Atmosphere" Environ. Sci. Technol., 12, 1072 (1978).

M. D. Morris and G. L. Kok, "The Electrochemistry of Organometallic Compounds", in A. J. Bard, ed., Encyclopedia of Electrochemistry of the Elements, vol. XIII, pp. 2-70, Marcel Dekker (1979).

G. L. Kok, "Measurements of Hydrogen Peroxide in Rainwater", Atmos. Environ, 14, 653 (1980).

G. L. Kok, "Measurement of Hydrogen Peroxide from Aircraft Platforms", Atmos. Tech. (1980). (In Press)

Grants Active:

Federal Aviation Administration, "Testing of Instrumentation for High Altitude Hydrogen Peroxide Measurements", $17,056.

Environmental Protection Agency, "Hydrogen Peroxide and Formaldehyde in the Los Angeles Air Basin II", $43,137.

Environmental Protection Agency, $45,000, Measurements in the PEPE/NEROS Program.

Coordinating Research Council, $98,125, Interlaboratory Comparison Study for the Measurement of Formaldehyde and Other Aldehydes.

National Science Foundation, $30,000, Analytical Instrumentation for the Determination of Formaldehyde in Ambient Air.

KUBOTA, MITSURU (b. 1932) Professor. B.S., 1954, University of Hawaii, Ph.D., 1960, University of Illinois (Urbana). Inorganic Chemistry. Reaction of transition metal organometallic complexes, homogeneous catalysis.

Eleven publications since 1976.

M. Kubota and *T. G. Chappell, J. Chem. Soc. Dalton Trans., 406 (1979). "Carbonylation of Azidothiocarbonyl Complexes of Rhodium and Iridium."

M. Kubota, C. A. Koerntgen, and *G. W. McDonald, Inorg. Chim. Acta, 30, 119 (1978). "Oxidative Addition of Nitrogen(IV) Oxide to Complexes of Platinum, Iridium, and Rhodium".

M. Kubota, *T. G. Chappell, and *S. P. Powers, "Dinitrogen Complexes of Iridium. The Influence of Ancillary Ligards", Inorg. Chem., 18, 3615 (1979).

M. Kubota *K. J. Evans, C. A. Koerntgen and *J. C. Marsters, Jr., "Reduction of Nitric Oxide by Carbon Monoxide in Aqueous Solutions of Palladium(II) and Copper(II)", J. Mol. Catalysis, 7 481 (1980).

M. Kubota, D. A. Phillips, and J. E. Jacobsen, "Decarbonylation of Anylchlorobis(triphenylphosphine)platinum(II) Complexes Promoted by Tin (II) chloride", J. Coord. Chem., 10, 125 (1980).

MYHRE, PHILIP C. (b. 1933) Professor. B.A., 1954, Pacific Lutheran University, Ph.D., 1958, University of Washington. Organic Chemistry. Reaction mechanisms, synthesis, solid-state ^{13}C NMR.

Six publications since 1976.

*T. Banwell, *C. S. Morse,, P. C. Myhre, and A. Vollmar, "The Consequences of Ipso Attack in Aromatic Nitration. Studies of the Solvolytic Behavior of 4-Nitro-3,4,5-Trimethylcyclohexadienyl Acetate", J. Am. Chem. Soc., 99, 3042 (1977).

*C. Barnes and P. C. Mhyre, "Ipso Nitration. A Study of the Migratory Aptitude of the Nitro Group in the 1,2-Dimethyl-1-nitrocyclohexadienyl Cation", J. Am. Chem. Soc., 100, 975 (1978).

*K. S. Feldman, *A. McDermott, and P. C. Myhre, "Ipso Nitration. Preparation of 4-Methyl-4-nitrocyclohexadienols and Detection of Intramolecular Hydrogen Migration (NIH Shift) upon Solvolytic Rearomatization", J. Am. Chem. Soc., 101, 505 (1979).

*K. S. Feldman and P. C. Myhre, "Ipso Nitration. Use of Ipso Nitration Products as Sources of Carbon Electrophiles in Regiospecific Syntheses of Aromatic Derivatives", J. Am. Chem. Soc., 101, 4768 (1979).

*C. E. Barnes, *K. S. Feldman, *M. W. Johnson, *H. W. H. Lee, and P. C. Myhre, "Ipso Nitration. An Efficient Synthesis of Ipso Nitration Products of Aromatic Hydrocarbons", J. Org. Chem., 44, 3925 (1979).

Grant active 1980-1982: Army Research Office, $146,700. Ipso Nitration. Regiospecific Nitration via Ipso Nitration Products.

SLY, WILLIAM G. (b. 1922) Professor. B.S., 1951, San Diego State College, Ph.D., 1955, Calif. Inst. of Tech. Organic and metal organic molecular structure studies, Crystallographic computing.

Colin L. Raston, William G. Sly and Allan H. White, "Crystal Structure of Bis(N, N-diethyl-dithiocarbamato) (isothiocyanato)iron(III)", Aust. J. Chem., 33, 221-4 (1980).

VAN EIKEREN, PAUL (b. 1946) Associate Professor. B.A., 1968, Columbia College, Ph.D., 1971, M.I.T., Organic and Biological Chemistry. Mechanism of enzymatic catalysis, biological electron, transfer reactions, enzyme regulation.

Eight publications since 1976.

P. van Eikeren and D. L. Grier, "Models for NADH Co-enzymes. Isotope Effects in the N-Benzyldihydronicotinamide/N-Benzylnicotinamide salt Transhydrogenation Reaction", J. Am. Chem. Soc., 99, 8056 (1977).

P. van Eikeren, *P. Kenney, and *R. Tokmakian, "Models for NADH Co-enzymes. Evidence for an Electron Transfer Mechanism Yielding a Radical Cation Intermediate in the N-Benzyldihydronicotinamide/N-Benzylnicotinamide Salt Transhydrogenation Reaction", J. Am. Chem. Soc., 101, 7402 (1979).

P. van Eikeren, *D. L. Grier, and *J. Eliason, "Models for NADH Co-enzymes. Reactions of 2-Carboxyl-Substituted Pyridines with N-alkyl-1,4-dihydronicotinamides, J. Am. Chem. Soc., 101, 7406 (1979).

D. M. Chipman, R. Yaniv, and P. van Eikeren, "Models for Nicotinamide Co-enzymes. Isotope Effect Discripancies in the Reaction of Dihydronicotinamides with Trifluoroacetophenone are Due to Adduct Formation", J. Am. Chem. Soc., 102, 3244 (1980).

P. van Eikeren, "Models for Glycoside Hydrolysis. Synthesis and Hydrolytic Studies of the Anomers of a Conformationally Rigid Acetal", J. Org. Chem., 45(1980).

VAN HECKE, GERALD R. (b. 1939) Professor. B.S., 1961, Harvey Mudd College; A.M. 1963, Ph.D., 1966, Princeton University. Physical Chemistry. Liquid Crystals: Physical properties of pure or binary mixtures of mesogens; thermodynamics of binary phase diagrams.

Thirteen publications since 1976.

*B. W. Williams and G. R. Van Hecke, "Homologus trans-4-ethoxy-4'-ω-cyclohexyl n-alkanoyl- and trans-4-ethoxy-4'-ω-phenyl-n-alkanoyl- oxyazobenzenes. Calorimetry," J. Phys. Chem., 84, 2580 (1980).

G. R. Van Hecke, *T. H. Smith, and *R. D. Prottas, "Excess Volumes as Functions of Composition and Temperature for Binary Mixtures of Asymmetric, Homologous Nematogenic Azobenzenes", Proceedings of the International Liquid Crystal Conference Bangalore 1979, S. Chandrasekhar, Ed., Hayden-Stone, Phila. PA. 1980.

G. R. Van Hecke, "Thermodynamics of the Liquid Two-Phase Regions in Binary Mixtures of Mesogenic Materials", The Physics and Chemistry of Liquid Crystal Devices, G. D. Sprokel, Ed., Plenum Press, New York, N. Y. 1980.

G. R. Van Hecke, *T. S. Cantu, M. Domon, and J. Billard, "Use of Regular Solution Theory for Calculating Binary Mesogenic Phase Diagrams Exhibiting Azeotrope-like Behavior for Liquid Two-Phase Regions. II. Complex Maxima Forming Systems", J. Phys. Chem., 84, 263, 1980.

G. R. Van Hecke, "Use of Regualr Solution Theory for Calculating Binary Mesogenic Phase Diagrams Exhibiting Azeotrope-like Behavior for Liquid Two-Phase Regions. I. Simple Minimum Forming Systems", J. Phys. Chem., 83, 2344 (1979).

HAVERFORD COLLEGE

Haverford, PA 19041

Fall 1980 ug enrollment 1070

Degrees offered B.A., B.S.

Telephone (215) 649-9600 x341

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 6 . 2. Support staff, FTE's: Sec'y 1 Stockrm $\frac{1}{2}$ Technical $\frac{1}{3}$
3. 1980 seniors & their placement: Total 24 Grad. school 4 Industry ______ Professional schools 17 Other 3 .
4. Senior majors, average past five years: 19 .
5. Undergraduates involved in research, average past five years:
   Academic year 10 Summer 3
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

NSF Graduate Fellowships (2): Mark T. Vandersall (1977)
Douglas A. Julin (1978)

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 15,000
2. Instrumentation:

NMR - 60 MHz (PE R-12)
MS (PE Hitachi RM 50)
GC (PE 3920 for MS: F&M 5750)
UV-Vis (Cary 118, PE Coleman 124)
Liq. Sci. (Packard Tri-Carb 3320)
HPLC (Waters)
IR (PE 237B)
FS (PE MPF-3L)
X-Ray Generator
Weissenberg and Precession Cameras
(NONIUS Y-925, SUPPER 9000-W)

3. Library resources: CA? Yes Volume indices? No Collected indices? Yes Total journal subscriptions? 36 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? Yes Standing orders for review series and annual reviews (past five years) 22 .

4. Computer facilities: Department: PDP11-03 equipped with graphics terminals (DECVT55, HP9872A and HP2648A), decwriter II teletype and A/D interface; Wang 720B prog. calc. Campus: DEC 11/34 with disc and tape drives and other minicomputers.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   Approx. $5000/yr. chemicals and glassware; $3500 equipment maintenance

2. Departmental grants: Pont College Science Grant $7,000; General Electric Foundation $4,000; Smith Kline and French $500.

3. Faculty teaching loads: Contact hours 12 Load credit for research? Yes .

4. Sabbatical or leave support for research: Faculty can apply for sabbatic leave at 50% salary full year, 100% salary for 1/2 year, after 12 semesters' service.

FACULTY PROFILE

CHESICK, JOHN P. (b.1933) Professor. B.S., 1954, Purdue University; Ph.D., 1957, Harvard University. Physical Chemistry. Chemical kinetics and molecular structure.

J.P. Chesick and *R. Stabler, A program System for Computer Integration of Multistep Reaction Rate Equations Using the Gear Integration Method, Int. J. of Chem. Kn., 55, 461 (1978).

J.P. Chesick, D.E. Koshland, and *S.E. Myers, The Crystal Structures of 1,3, 5-Trimethylbenzenetricarbonylmolybdenum and Hexamethylbenzenetricarbonylbdenum, Acta Cryst., B33, 2013 (1977).

J.P. Chesick and *M.D. Morse, 1,2, trans Diaminocyclohexane Hydrobromide, Acta Cryst., B32, 954 (1976).

J.P. Chesick, W.C. Davidon, and *C. Schoen, Application of a New Least Squares Method to Structure Refinement, Acta Cryst., A32, 120 (1976).

GAVIN, ROBERT M., JR. (b.1940) Professor. B.A., 1962, St. Johns University; Ph.D., 1966, Iowa State University. Physical Chemistry. Molecular structure, spectroscopy, chemical bonding; surface catalysis.

C.M. Friend, R.M. Gavin, E.L. Muetterties, and M.C. Tsai, Coordination Chemistry of Metal Surfaces, J. Am. Chem. Soc., 102, 1717 (1980).

H.W. Choi, R.M. Gavin, and E.L. Muetterties, Zerovalent Metal Phosphite Chemistry, J. Chem. Soc., Chem. Comm., 1085 (1979).

R.M. Gavin, Jr., *C. Weisman, J.K. McVey, and S.A. Rice, Spectroscopic Properties of Polyenes. III. 1,3,5,7 Octatetraene, J. Chem. Phys., 68, 522 (1978).

J.W. Laing, M.G. Sceats, S.A. Rice, and R.M. Gavin, A Simulation of the Conformation of All-Trans Retinal by Transfer of Local Conformations, Chem. Phys. Letters, 41, 419 (1976).

LERMAN, CHARLES L. (b.1948) Assistant Professor. B.S., 1969, Yale University; Ph.D., 1974, Harvard University. Physical Organic and Bio-organic Chemistry. Enzyme mechanisms, enzyme models.

C.L. Lerman and M. Cohn, ^{31}P NMR Quantitation of the Displacement of Equilibria of Arginine, Creatine, Pyruvate, and 3-P-Glycerate Kinase Reactions by Substitution of Sulfur for Oxygen in the β Phosphate of ATP, J. Biol. Chem., 255, 8756-8760 (1980).

C.L. Lerman, An Effective Demonstration of the Behavior of Indicators and Biochemicals in Buffers, J. Chem. Educ., 53, 634-635 (1976).

C.L. Lerman and F.H. Westheimer, Ionization of Oxyphosphoranes. Phosphonium Ions and Hexacoordinated Phosphorus Anions, J. Amer. Chem. Soc., 98, 179-184 (1976).

Grants active 1980-81: NIH, Active Site of δ-Aminolevulinic Acid Dehydratase, $107,386; Petroleum Research Fund, Mechanism of Action of 5-Aminolevulinic Acid Dehydratase, $9000.

MAC KAY, COLIN F. (b. 1926) Professor. B.S., 1950, University of Notre Dame; M.S., 1953, Ph.D., 1956, The University of Chicago. Physical Chemistry. Atomic chemistry and photochemistry; hot atom chemistry.

C. MacKay and W.T. Rose, Effect of Electronic State of Carbon Atoms on Their Reactions with Cyclopentadiene in Inert Gas Moderated Systems, J. Am. Chem. Soc., 99, 4917 (1977).

WINTNER, CLAUDE E. (b.1938) Professor and Chairman. A.B., 1959, Princeton University; M.A., 1960, Ph.D., 1963, Harvard University. Organic Chemistry. Organic synthesis; chemistry of the azo group.

C.E. Wintner, "Strands of Organic Chemistry," Holden-Day, San Francisco (1979), 128 pages.

A. Eschenmoser and C.E. Wintner, Natural Product Synthesis and Vitamin B_{12}, Science, 196, 1410 (1977).

R.K. Müller, R. Joos, D. Felix, J. Schreiber, C.E. Wintner, and A. Eschenmoser, The Preparation of N-Aminoaziridines, Organic Syntheses, 55, 114 (1976).

D. Felix, C.E. Wintner, and A. Eschenmoser, The Fragmentation of α,β-Epoxyketones to Acetylenic Aldehydes and Ketones, Organic Syntheses, 55, 52 (1976).

HENDRIX COLLEGE
Conway, Arkansas 72032

Fall 1980 ug enrollment 1037
Degrees offered B.A.
Telephone (501) 450-1250

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 3½. 2. Support staff, FTE's: Sec'y 0.3 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 15 Grad. school 4 Industry 0 Professional schools 9 Other 2.
4. Senior majors, average past five years: 11.
5. Undergraduates involved in research, average past five years: Academic year 4 Summer 3
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years: None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 15,000
2. Instrumentation:
   - AA/AE (251 Instrumentation Laboratory)
   - IR (Pye Unicam SP 1000)
   - NMR (Varian EM-300X)
   - NMR (Varian EM-360A)
   - UV (Beckman DB-G)
   - UV-Visible (Beckman Acta C-III)
   - Polarograph (Sargent III)
   - GC (Perkin-Elmer 820)
3. Library resources: CA? Yes Volume indices? Yes Collected indices? No Total journal subscriptions? 19 Computer literature search service? No Separate chemistry or science library? No Librarian? N/A Standing orders for review series and annual reviews (past five years) 7.
4. Computer facilities: Department: 36-K Commodore Pet 2001; In the building: 3-18K Commodore Pet 2001, 3-18K Commodore Pet Tractor Printer, Wang 2200, Terminal to campus Burroughs 1850.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: About $1,000 per year for chemicals, project grants and travel expenses.
2. Departmental grants: None
3. Faculty teaching loads: Contact hours 12 Load credit for research? No
4. Sabbatical or leave support for research: No set policy. One faculty member currently on leave for research with college continuing all fringe benefits during leave.

FACULTY PROFILE

GOODWIN, THOMAS E. (b. 1947) Assistant Professor. B.S., 1969, Ouachita Baptist University, Ph.D., 1974, University of Arkansas, Fayetteville. *Organic Chemistry*. Organochemical synthesis of medicinally-active natural products.

Eleven publications and three patents, 1976-1980.

C. S. Giam, T. E. Goodwin, *K. F. Rion and S. D. Abbott, "Interactions of 4-Isopropylpyridine with Organolithium Reagents and Lithium Aluminum Hydride," *J. Chem. Soc.*, *Perkin I*, 3082 (1979).

C. S. Giam and T. E. Goodwin, "A Direct Synthesis and Carbon-13 Nuclear Magnetic Resonance Spectral Analysis of 4-Substituted Isoquinolines," *J. Org. Chem.*, *43*, 3780 (1978).

E. Wenkert, T. E. Goodwin and B. C. Ranu, "λ-Alkylation of α,β-Unsaturated Carbonyl Compounds," *J. Org. Chem.*, *42*, 2137 (1977).

W. L. Meyer, C. W. Sigel, R. J. Hoff, T. E. Goodwin, R. A. Manning and P. G. Schroeder, "Diterpenoid Total Synthesis. An $A \rightarrow B \rightarrow C$ Approach. 12. Aromatic C Rings Without Alkyl Substituents. Model Systems for Podocarpic Acid and Diterpenoid Alkaloids," *J. Org. Chem.*, *42*, 4131 (1977).

T. E. Goodwin and C. M. Starks, "Method of Preparing Hydrocarbyl-Substituted Cresols," Continental Oil Company, U.S. Patent No. 4,110,543 (August 29, 1978).

Grants Active 1979-81: Research Corporation Cottrell College Science Grant, \$13,400; The Petroleum Research Fund of the American Chemical Society, Type B Grant, \$13,000; "The Prelude to a Convergent Synthetic Approach to Maytansine Analogues *via* Conjugate Additions to Hex-1-enopyran-3-uloses and α-Alkylation of 1-Aryl-2-methyl-2-propen-1-ols."

MIR, QUI-CHEE (b. 1951) Visiting Assistant Professor. B.S., 1973, Chung-Yuan College of Science and Engineering (Taiwan), M.S., 1976, Portland State University, Ph.D., 1980, University of Idaho. *Inorganic Chemistry*. Synthesis and characterization of sulfur/phosphorusfluorine compounds.

Seven publications, 1979-80.

Q. C. Mir, H. F. White and G. L. Gard, "Addition Reactions of SF_5Br with $CH_3C\equiv CH$ and $CF_3\,C\equiv CH$," *Journal of Fluorine Chemistry*, *13*, 455 (1979).

Q. C. Mir, D. P. Babb and J. M. Shreeve, "Two Stable Thiosulfuranes, $CF_3(CF_3S)S\{OC(CF_3)_3\}_2$ and $C_6F_5(C_6F_5S)S\{OC(CF_3)_3\}_2$," *Journal of American Chemical Society*, *101*, 3961 (1979).

Q. C. Mir, D. P. Babb and J. M. Shreeve, "A Comparative Study of Reactions of F-(t-butyl) Hypochlorite and F-methyl-Hypochlorite with Simple Sulfur Compounds," *Journal of American Chemical Society*, *101*, 5945 (1979).

Q. C. Mir and J. M. Shreeve, "F-(Tri-t-butoxy) and phosphine and F-(penta-t-butoxy) phosphorane," *Phosphorus and Sulfur*, *8*, 331, (1980).

Q. C. Mir and J. M. Shreeve, "Reactions of Hexafluoroacetone with Simple Sulfur Compounds and Related Chemistry," *Inorganic Chemistry*, *19*, 1510 (1980).

SHIDELER, ROBERT W. (b. 1913) Professor (Half-time). B.A., 1934, Goshen College, M.S., 1941, University of Chicago, Ph.D., 1956, University of Texas. *Biochemistry*.

STUCKEY, JOHN E. (b. 1929) Professor and Chairman. B.A., 1951, Hendrix College, M.S., 1953, University of Oklahoma, Ph.D., 1957, University of Oklahoma. *Physical Chemistry*.

TEAGUE, MARION WARFIELD (b. 1941) Associate Professor (on year leave of absence for research). B.S., 1963, Ouachita Baptist University, M.S., 1968, Purdue University, Ph.D., 1971, Purdue University. *Inorganic Chemistry*. Gas phase ion-molecule reactions.

COLLEGE OF THE HOLY CROSS
Worcester, MA 01610

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Telephone (617) 793-3379

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 9 . 2. Support staff, FTE's: Sec'y 1½ Stockrm 3 Technical 0
3. 1980 seniors & their placement: Total 46 Grad. school 7 Industry 2 Professional schools 12 Other 25 .
4. Senior majors, average past five years: 41 .
5. Undergraduates involved in research, average past five years:
   Academic year 25 Summer 4
6. Master's program? yes Master's degrees conferred, average past five years: 1
7. National honors, undergraduate or senior majors, past five years: None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 21,000
2. Instrumentation:
   NMR Spect. 60 MHz (P.E. R-24 and P.E. R20)
   UV-VIS Spect. (P.E. Model 559 and DK-2A)
   AA Spect. (P.E. Model 103)
   IR Spect. (P.E. Model 457)
   Fluorescence Spect. (P.E. Model 204)
   Flash Photolysis
   HPLC (Waters ALC-240)
   HPLC (Waters Prep. 500)
   GC (Varian 200, Gow-Mac 150)
3. Library resources: CA? Yes Volume indices? Yes Collected indices? Some Total journal subscriptions? 45 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? Yes Standing orders for review series and annual reviews (past five years) 20 .
4. Computer facilities: Departmental: HP9820A and HP9810A Programmable (with BCD interfaces) and HP9862A Plotter.
   College: DEC VAX-11/780 Computer, Tektronix 4006-1 graphics terminal, Tektronix plotter.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: $13,500/year (faculty research)
   $18,000/year (equipment)
2. Departmental grants:
3. Faculty teaching loads: Contact hours 13 Load credit for research? yes .
4. Sabbatical or leave support for research:
   Sabbatical - every 7 years - 80% salary full/yr, full salary ½ year.
   Faculty Fellowship - anytime if approved - 80% salary full/yr, full salary ½ yea

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FACULTY PROFILE

BYERS, BLAINE H. (b. 1948) Assistant Professor. B.A., 1970, Ohio Wesleyan University, Ph.D., 1975, University of Illinois. Inorganic Chemistry. Metal carbonyl radical chemistry. Water splitting reactions. Solid state adsorption studies.

B. H. Byers and T. L. Brown, The Characteristics of $M(CO)_5$ and Related Metal Carbonyl Radicals: Abstraction, Dissociative and Oxidative Addition Processes, J. Am. Chem. Soc., 99, 2527 (1977).

B. H. Byers and T. L. Brown, On the Mechanisms of Substitution of Hydridopentacarbonylmanganese(I), J. Organomet. Chem., 127, 181 (1977).

Grant active 1980-81: Research Corporation, $6400, Interaction of H_2O with Base-Substituted Metal Carbonyl Radicals.

DEAKYNE, CAROL A. (b. 1949) Assistant Professor. B.S., 1971, Rider College, M.S., 1972, Carnegie-Mellon University, Ph.D., 1976, Princeton University. Theoretical Chemistry. Electronic structure analysis via molecular orbital theory of organic, physical and biochemical problems.

C. A. Deakyne and L. C. Allen, Nucleophilic Additions to Phosphine Oxides. A Model Study of Anionic Trigonal Bipyramidal Intermediates, J. Am. Chem. Soc., 98, 4076 (1976).

C. A. Deakyne, L. C. Allen and V. W. Laurie, Bond Length Changes Resulting from Substitution and Ring Opening in Three-Membered Systems, J. Am. Chem. Soc., 99, 1343 (1977).

C. A. Deakyne, N. C. Craig and L. C. Allen, Bond Length Changes Resulting from Halogen Substitution on Three-Membered Rings, J. Am. Chem. Soc., 99, 3895 (1977).

A. Warshel and C.A. Deakyne, Coupling of Charge Stabilization, Torsion, and Bond Alternation in Light-Induced Reactions of Visual Pigments, Chem. Phys. Lett., 55, 459 (1978).

C. A. Deakyne and L. C. Allen, The Role of Active-Site Residues in the Catalytic Mechanism of Ribonuclease A, J. Am. Chem. Soc., 101, 3951 (1979).

DITZLER, MAURI A. (b. 1953) Assistant Professor. B. A., 1975, Wabash College, Ph. D., 1979, Duke University. Analytical Chemistry. Methods development.

M. A. Ditzler and W. F. Gutknecht, Gas Chromatography and Catalysis Applied to Trace Metal Speciation. Determination of Cuprous Ion, Anal. Lett., A(11), 611 (1978).

M. A. Ditzler and W. F. Gutknecht, Re-examination of Potentiometric Studies of the Oxidation of o-Tolidine, Anal. Chem., 50, 1883 (1978).

M. A. Ditzler and W. F. Gutknecht, Determination of Trace Levels of Iron (III) by Homogeneous Catalysis and Gas Chromatography, Anal. Chem., 52, 614 (1980).

INGLEFIELD, PAUL T. (b. 1940) Visiting Lecturer. B.Sc., 1962, University of Glasgow, Ph.D., 1967, University of British Columbia. Physical Chemistry. Nuclear magnetic resonance, structure and dynamics.

P. T. Inglefield, K. A. Lindblom and A. M. Gottlieb, Water Binding and Mobility in Phosphatidylcholine-Cholesterol-Water Lamellar Phase, Biochim. et Biophys. Acta, 419, 196 (1976).

McGRATH, MICHAEL G. (b. 1941) Associate Professor. B.S., 1963, College of the Holy Cross, Ph.D., 1967, Massachusetts Institute of Technology. *Organic Chemistry*. Organic synthesis and small-ring compounds; education of the pre-health professional student.

McMASTER, PAUL D. (b. 1932) Professor. B.S., 1954, College of the Holy Cross, Ph.D., 1961, Clark University. *Organic Chemistry*. Conformational analysis, drug design.

Seven publications, 1976-1980

P. A. Tenthorey, R. L. DiRubio, H. S. Feldman, B. H. Takman, E. W. Byrnes and P. D. McMaster, New Antiarrhythmic Agents.3. Primary β-Aminoanilides, *J. Med. Chem.*, *22*, 1182 (1979).

P. D. McMaster, E. W. Byrnes, H. S. Feldman, B. H. Takman and P. A. Tenthorey, New Antiarrhythmic Agents.2. Amide Alkyl-α-Aminoxylidides, *J. Med. Chem.*, *22*, 1177 (1979).

E. W. Byrnes, P. D. McMaster, E. R. Smith, et al, New Antiarrhythmic Agents.1. Primary α-Amino Anlides, *J. Med. Chem.*, *22*, 1171 (1979)

P. D. McMaster, E. W. Byrnes, A. J. Block and P. A. Tenthorey, New Antiarrhythmic Agents.5.α-Aminoaceto-2,6-xylidides with Functionalized Amide Alkyl Substituents, *J. Med. Chem*. In Press.

P. A. Tenthorey, R. A. Ronfeld, H. S. Feldman, R. V. Sandberg, P. D. McMaster, and E. R. Smith, New Antiarrhythmic Agents.4. 1,2,3,4-Tetrahydronaphthalene-1-spiro-3'-(1'-aminoalkyl)-pyrrolidine-2',5'-dione Derivitives, *J. Med. Chem*. In Press.

PEACE, G. EARL, JR. (b. 1945) Associate Professor, B.S., 1966, Lafayette College, M.S., 1968, University of Illinois, Urbana-Champaign, Ph.D., 1971, University of Illinois, Urbana-Champaign. *Analytical Chemistry*. Environmental studies.

G. E. Peace, Jr., Edward Hart-The Man Behind the Journal, *Anal. Chem.*, *50*, 1194A (1978).

M. J. Bradford, S. J. Ali and G. E. Peace, Jr., Mercury in North Atlantic Lobster of the New York Bight, *Proc. Penn. Acad. Sci.*, *51*, 26 (1977).

RICCI, ROBERT W. (b. 1934) Professor and Chairman. B.S., 1956, Boston College, Ph.D., 1961, University of New Hampshire. *Physical Chemistry*. Photophysics of aromatic compounds.

*D. Busch, *L. Dahm, *B. Siwicke and R. W. Ricci, Singlet-Quenching of Photoexcited Aromatics by Carbonyl Compounds, *Tetrahedron Letters*, *51*, 4489 (1977).

R. W. Ricci and *J. Nesta, Inter- and Intramolecular Quenching of Indole Fluorescence by Carbonyl Compounds, *J. Phys. Chem.*, *80*, 974 (1976).

Grant Active 1980-82: Department of the Army, $14,000, Flash Photolysis Studies of Aromatics.

VELLACCIO, FRANK (b. 1948) Assistant Professor. B.A., 1970, Fordham University, Ph.D., 1974, Massachusetts Institute of Technology. *Organic Chemistry*. Methods in biochemistry-peptide synthesis.

D. S. Kemp and F. Vellaccio, *Organic Chemistry*, Worth Publishers, Inc., New York, 1980.

VELLACCIO, FRANK, cont'd

D. S. Kemp and F. Vellaccio, Workbook to Accompany Organic Chemistry, Worth Publishers, Inc., New York, 1980.

J. Reczek, F. Vellaccio, and D. S. Kemp, The Irrelevance of an Intramolecular Salt Bridge for Solvent-Catalyzed Decarboxylation...Solvent Catalysis of the Decarboxylation of 4 and 6-(2',4',6'-Trimethylpyridinium)-Benzisoxazole-3-Carboxylate, Tetrahedron Letters, 8, 741 (1978).

F. Vellaccio, R. V. Punzar and D. S. Kemp, Reaction of Dialkylmalonyl Dichlorides with 1, 3-Diamenopropanes-A New Route to Macrocyclic Polyamides and Polyamines, Tetrahedron Letters, 6, 547 (1977).

VIDULICH, GEORGE A. (b. 1931) Associate Professor. B.A., 1959, University of Connecticut, Ph.D., 1964, Brown University. Physical Chemistry. Structure and properties of water and aqueous electrolyte and non-electrolyte solutions. Metal ion solvation by NMR spectroscopy. Chemistry of acid rain.

G. A. Vidulich and A. Fratiello, A Room Temperature Proton Magnetic Resonance Hydration Number Study, J. Chem. Ed., 55, 672 (1978).

HOPE COLLEGE

Holland, MI 49423

Fall 1980 ug enrollment 2200

Degrees offered B.Sc. B.A.

Telephone (616)392-5111 ext. 3213

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 9 . 2. Support staff, FTE's: Sec'y 1 Stockrm 1 Technical 0
3. 1980 seniors & their placement: Total 31 Grad. school 10 Industry 6 Professional schools 12 Other 3 .
4. Senior majors, average past five years: 34 .
5. Undergraduates involved in research, average past five years:
   Academic year 42 Summer 31
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   Four NSF Graduate Fellowships: Charles C. McOsker (1976), David M. Bartels (1977), David M. Hedstrand (1977), and William J. Patrie (1979).

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 22,000
2. Instrumentation:
   - MS (Finnigan 1015 GC-mass spec)
   - NMR (Varian FT-80A and EM-360A)
   - UV-VIS (Pye-Unicam SP8-200, GCA-McPherson EU-707, Cary 14)
   - IR (PE-621, 727, 137)
   - AA (Varian 475 with graphite furnace and auto sampler)
   - HPLC (Waters ALC/GPC-244 with microproc. control)
   - Ultracentrifuge (DuPont-Sorvall ODT-50)
   - GC (5 dual, 4 single column, 2 integrat.)
   - Laser lab with IMSAI microcomputer and signal processing
   - Polarimeter (PE-241)
3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 70 Computer literature search service? yes Separate chemistry or science library? yes Librarian? yes Standing orders for review series and annual reviews (past five years) 30 .

4. Computer facilities: Department - Nuclear Data 812 minicomputer with cass. tape storage and CRT graphics; IMSAI 8080A microcomputer with videoterminal. College-Xerox Sigma Six, 48K core, Tetronix graphics terminal, and Calcomp plotting services.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   Instrument maintenance ($5,000); all common instrumental supplies, solvents, gases, and laboratory equipment.
2. Departmental grants: NSF-URP, $13,200 (1981), Dreyfus-Educational Grant, $8,000, Du Pont Science Grant, $7,000, Johnson Wax Fund, $2,500; NSF 69A Grant, $24,500 (U.V.-vis); NSF ISEP, $8,000; Warner-Lambert, $1,500.

3. Faculty teaching loads: Contact hours 11 Load credit for research? 25%

4. Sabbatical or leave support for research:

   Faculty are eligible for sabbatical leave after completion of six years of faculty employment; full salary for 1/2 year or 50% salary for full year.

FACULTY PROFILE

BOYER, RODNEY F. (b. 1942) Associate Professor. B.A., 1964, Westmar College, M.S. 1967, Ph.D., 1969, Colorado State University. Biochemistry. Biological hydroxylation, neurochemistry of 2-hydroxyfatty acids, metal-ion-facilitated reactions of biomolecules, enzymatic hydrolysis of cellulose.

R.F. Boyer, "A Spectrophotometric Assay of Polyphenoloxidase Activity", J. Chem. Ed., 54, 585 (1977).

R.F. Boyer, *M.E. Wernette, *S. Van Wylen, *E. Faustman, and *R. Titus, "2-Hydroxyacids as Biochemical Ligands. Copper(II)-Facilitated Hydrolysis of 2-Hydroxyacid Esters", J. Inorg. Biochem., 10, 205 (1979).

R.F. Boyer, *D. Litts, *J. Kostishak, R. Wijesundra, and F. Gunstone, "The Action of Lipoxygenase-1 on Furan Derivatives", Chem. Phys. Lipids, 25, 237 (1979).

R.F. Boyer, "Zinc(II)-Facilitated Hydrolysis of 2-Hydroxyacid Esters. A Model for Carboxypeptidase A", J. Inorg. Nucl. Chem. (Bioinorganic Section) 42, 155 (1980).

Grant Active 1980-82: ACS-PRF, $13,000, 2-Hydroxyacids as Biochemical Ligands.

BRINK, IRWIN J. (b. 1930) Professor. A.B., 1952, Hope College, Ph.D., University of Illinois. Physical Chemistry. Thermodynamics of molecular crystals, detection of and fate of halogenated hydrocarbons in the environment.

I.J. Brink and C.E. Holley Jr., "The Enthalpy of Formation of Strontium Monoxide", J. Chem. Thermodynamics, 259-266 (1978).

DOYLE, MICHAEL P. (b. 1942) Professor. B.S., 1964, College of St. Thomas, Ph.D., 1968, Iowa State University. Henry and Camille Dreyfus Foundation Teacher-Scholar Awardee, 1973-1978. Organic Chemistry. Catalytic methods for organic transformations; formation and reactions of dinitrogen compounds; chemical oxidations; selective chemical processes; reactions of nitrosyl compounds; bioinorganic chemistry.

Thirty publications, 1976-1980, including three books.

M.P. Doyle, *F.J. Van Doornik, and *C.L. Funckes, "Nitrosyl Transfer to Metallo-proteins. Selective Intermolecular Transfer of the Nitrosyl Group from Cobalt Nitrosyls to Hemoglobin and Myoglobin", Inorganica Chemica Acta, 46, L111 (1980).

M.P. Doyle, *W.E. Buhro, *J.G. Davidson, *R.C. Elliott, *J.W. Hoekstra, and *M. Oppenhuizen, "Lewis Acid Promoted Reactions of Diazocarbonyl Compounds. 3. The Synthesis of Oxazoles from Nitriles Through Intermediate β-Imidatoalkenediazonium Salts", J. Org. Chem., 45, 3657 (1980).

M.P. Doyle, *R.L. Dow, *V. Bagheri, and *W.J. Patrie, "Steric Selectivity in Oxidations of Diols", Tetrahedron Lett., 21, 2795 (1980).

M.P. Doyle and *J.G. Davidson, "Molybdenum Hexacarbonyl Catalyzed Cyclopropanation of α,β-Unsaturated Esters and Nitriles with Diazocarbonyl Compounds", J. Org. Chem., 45, 1538 (1980).

M.P. Doyle, *W.E. Buhro, and *J.E. Dellaria, Jr., "Lewis Acid-Promoted Cyclopropanation of α,β-Unsaturated Carbonyl Compounds by Diazocarbonyl Compounds. A Facile Synthesis of 1,2-Disubstituted Cyclopropylcarbonyl Compounds of High Isomeric Purity", Tetrahedron Lett., 4429 (1979).

Grants active 1980-81: NSF, 1979-82, $121,300 - Formation and Reactions of Dinitrogen Compounds. NIEHS, 1979-82, $105,000 (Direct Costs) - Metalloprotein Nitrosyl Formation and Reactivity. Res. Corp., 1978-80, $9,600 - Electron Transfer Mediated by Metal Templates.

FRIEDRICH, DONALD M. (b. 1944) Assistant Professor. B.S., 1966 University of Michigan, Ph.D., 1973, Cornell University. Physical Chemistry. Spectroscopy of organic compounds and free radicals; excited state structures and force fields; rotational relaxation in solution.

Seven publications, 1976-1980.

D.M. Friedrich, *J. Van Alsten and *M.A. Walters, "Polorization and Concentration Dependence of Two-Photon Forbidden Electronic Origins: The $^1B_{2u}$ of Benzene in Solution", Chem. Phys. Lett. (1980) in press.

D.M. Friedrich and W.M. McClain, "Two-Photon Molecular Electronic Spectroscopy," Ann. Rev. Phys. Chem., 31, 559 (1980).

D.M. Friedrich and *S.A. Klem, "Excited Triplet State Polarizabilities in Laser Induced Refractive Index Transients", Chem. Phys., 41, 153 (1979).

D.M. Friedrich, "Gaussian Optics-Program for SR-52", Optical Spectra, 12:4, 64 (1978).

*S.A. Sprik and D.M. Friedrich, "A Versatile and Inexpensive Lens Holder for Optics Experiments", J. Chem. Ed., 54, 768 (1977).

Grants active 1980-81: PRF, 1980-82, $13,000 - Thermal Transient Studies in Hydrocarbons. NSF, 1980-81, $22,900 - Purchase of a Flash-lamp Pumped Dye Laser.

JEKEL, EUGENE C. (b. 1930) Professor. A.B., 1952, Hope College, M.S., 1955, Ph.D., 1964, Purdue University. Inorganic Chemistry. Chemical education, teacher development projects for high school chemistry teachers, pre-medical education and advising.

Grants active 1979-80: NSF, 1980, $35,726 - Summer Pre-College Teacher Development Project in Chemistry.

KLEIN, DAVID H. (b. 1933) Professor. A.B., 1954, Albion College, Ph.D., 1959, Case Institute of Technology. Analytical Chemistry. Environmental chemistry of metals, especially mercury. Atmospheric sources of metals and atmosphere-earth transfers.

MUNGALL, WILLIAM S. (b. 1945) Associate Professor. B.A., 1967, State University of New York at Buffalo, Ph.D., 1970, Northwestern. Organic Chemistry. Nucleotide chemistry, amine synthesis, aluminum enolate chemistry.

M.P. Doyle and W.S. Mungall, Experimental Organic Chemistry, John Wiley, N.Y. (1980). (A laboratory textbook.)

W.S. Mungall, *L.J. Lemmen, *K.L. Lemmen, *J.K. Dethmers, and L.L. Norling, "Nucleoside 5'-Monophosphate Analogs: The Synthesis of 5'-Sulfamino-5'-deoxynucleosides", J. Med. Chem., 21, 704 (1978).

W.S. Mungall and *J.K. Kaiser, "Carbamate Analogs of Oligonucleotides", J. Org. Chem., 42, 703 (1977).

SEYMOUR, MICHAEL D. (b. 1950) Assistant Professor. B.A., 1972, Saint Johns University, Ph.D., 1977, The University of Arizona. Analytical Chemistry. Application of solution and equilibrium chemistry to areas of environmental and clinical chemistry.

M.D. Seynour, J.W. Clayton, Jr. and Q. Fernando, "Determination of pK_a Values of Acid Components in Atmospheric Condensates by Linearization of Segmented Titration Curves", Anal. Chem., 49, 1429 (1977).

M.D. Seymour and Q. Fernando, "Effect of Ionic Strength on Equilibrium Constants", J. Chem. Educ., 54, 225 (1977).

M.D. Seymour, S.A. Schubert, J.W. Clayton, Jr., and Quintus Fernando, "Variations in the Acid Content of Rain Water in the Course of a Single Precipitation", Water, Air and Soil Poll., 10, 147 (1978).

SEYMOUR, MICHAEL D., cont'd

J.C. Ludwig, R.L. Misiorowski, M. Chvapil and M.D. Seymour, "Interactions of Zinc Ions with Electron Carrying Coenzymes NADPH and NADH", Chem.-Bio. Interactions, 30, 25 (1980).

Grant Active 1978-1980: ACS-PRF Type G, $10,000, "Identification and Quantitative Determination of the Acidic Components in Rain Water as a Function of Time During a Single Rainfall".

WILLIAMS, DONALD H. (b. 1938) Professor and Chairman. B.S., 1960, Muskingum College, Ph.D., 1964, Ohio State University. Inorganic Chemistry. Stereochemistry and reactivity of coordinated polydentate ligands.

ILLINOIS BENEDICTINE COLLEGE
Lisle, Illinois 60532

Fall 1980 ug enrollment 1504
Degrees offered B.S.
Telephone (312) 968-7270

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5 . 2. Support staff, FTE's: Sec'y 0.5 Stockrm 1.0 Technical 0
3. 1980 seniors & their placement: Total 13 Grad. school 6 Industry 2 Professional schools 5 Other 0 .
4. Senior majors, average past five years: 14 .
5. Undergraduates involved in research, average past five years:
   Academic year 15 Summer 2
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years: None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 18,000
2. Instrumentation:
   - NMR (P-E R24B)
   - MS (Varian EM600, B-H 21-490)
   - UV-Vis (P-E 202 & Hitachi EPS-3T)
   - Spectrofluorometer (Turner M-430)
   - X-ray (Phillips)
   - AA (Varian AA-175, M-1100, & B-485)
   - GC (P-E 900 & Varian A-90-P)
   - IR, three (P-E 337's)
   - Ultracentrifuge (B L5-65)
   - Polarograph (S XV)
3. Library resources: CA? Yes Volume indices? No Collected indices? No Total journal subscriptions? 38 Computer literature search service? Yes Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 18 .
4. Computer facilities: Department: minicomputer; Division: Hewlett Packard 2114; Campus: PDP 1134

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   About $4,000/year for chemicals, project grants and travel expenses
2. Departmental grants: NSF LOCI $14,000; NSF ISEP grant, $8,700; Army Research Contract, $22,000; Fats & Proteins Foundation, $4,000; PPG, $8,700.
3. Faculty teaching loads: Contact hours 14-15 Load credit for research? No .
4. Sabbatical or leave support for research: None

FACULTY PROFILE

FURR, HAROLD C. (b. 1946) Assistant Professor. B.A., 1968, Bridgewater College, M.N.S., 1975, Ph.D., 1978, Cornell University. Nutritional Biochemistry. Analytical methods for vitamin assay; metabolism of vitamins.

Six publications, 1976-80.

H.C. Furr, H.-H. Chang, and D.B. McCormick, "Lipoate Metabolism in P. putida LP: Thiolsulfinates of Lipoate and Bisnorlipoate", Archives Biochem. Biophys., 185, 576(1978).

H.C. Furr and D.B. McCormick, "Bacterial Catabolism of Lipoic Acid: Isolation and Identification of a Methyl Ketone", Int. J. for Vitamin and Nutr. Res., 48, 165(1978).

H.C. Furr, J.C.H. Shih, E.H. Harrison, H.-H. Chang, J.T. Spence, L.D. Wright, and D.B. McCormick, "Chromatographic and Spectral Properties of Lipoic Acid and its Metabolites", Methods in Enzymology, vol. 62(D), 129(1979).

HAZDRA, JAMES J. (b. 1933) Professor of Chemistry and Director of Healthcare Education. B.S., 1955, Illinois Benedictine College, Ph.D., 1959, Purdue University. Organic-Analytical Chemistry. Organic and Inorganic Analysis.

Eleven publications (1 patent), 1976-80.

J.J. Hazdra, "Chemistry in the Justice System", J. Chem. Educ., 57, 24(1980).

J.J. Hazdra, E.R. Brown, et. al., "Water Pollution and Diseases in Fish (An Epizootiologic Survey)", J. Environ. Pathology and Toxicology, 2, 917-25(1979).

J.J. Hazdra, E.R. Brown, et.al., "Chloroform and Its Relationship to Leukemia in Poikelotherms", IXth International Symposium on Comparative Research on Leukemia and Related Diseases, Pitsunda, U.S.S.R., Oct. 6, 1979, Adv. in Comp. Leukemia Res., Elsivier Biomedical Press (1980).

J.J. Hazdra, T.J. Bugno, J.P. Neenan, E.R. Brown, S.O. Schwartz, "Role of Magnesium in Leukocyte Cell Proliferation in Relation to Leukemogenesis", VIIIth International Symposium on Comparative Research on Leukemia and Related Diseases, Amsterdam, the Netherlands, Aug. 22-26, 1977, Abstract, p. 142, Adv. in Comp. Leukemia Res., (1977), E. Bentroctzer, ed., p. 320-321, Elsivier North Holland Biomedical Press (1978).

J.J. Hazdra, D.J. Rausch, K.D. Munninger, Antithrombogenic Hemodialysis Membrane, U.S. Patent #4,051,040, Sept. 27, 1977.

MCMILLAN, CLARA A. (b. 1919) Professor. Ph.D., 1946, University of Buenos Aires (Argentina). Inorganic-Nuclear Chemistry. Paramagnetism of Rare Earth Compounds, Electrolytic Preparation of Amorphous Hydrogenated Silicon.

RAUSCH, DAVID J. (b. 1940) Professor and Chairman. B.S., 1962, St. Procopius College, Ph.D., 1966, Iowa State University. Organic Chemistry. Structure determination, organic reaction mechanism, photochemistry.

D.J. Rausch, J.J. Hazdra, and K.O. Munninger, Antithrombogenic Hemodialysis Membranes, U.S. Patent #4,051,040, Sept. 27, 1977.

WESOLOWSKI, WAYNE E. (b. 1945) Associate Professor. B.S., 1967, St. Procopius College, Ph.D., 1971, University of Arizona. Physical-Inorganic Chemistry. Environmental Chemistry including iso-kinetic sampling of stationary sources. Computer simulation and industrial chemistry.

WESOLOWSKI, W.E., cont'd

W.E. Wesolowski and B. Morris, "A Computer Program for Traverse Point Location in Stack Sampling", Pollution Engineering, 12, No. 2(1980).

W.E. Wesolowski and J.J. Hazdra, "Industrial Chemistry--Modular In-Depth Approach", J. Chem. Ed., 54, 7(1977).

WINKLER, EDWARD M. (b. 1940) Assistant Professor. B.S., 1962, St. Bonaventure University, M.S.Ed., 1964, Canisius College, M.S.Chem., 1969, Canisius College, Ph.D., 1973, Kansas State University. Analytical and Clinical Chemistry. LSR and NMR, immunochemical reactions.

ITHACA COLLEGE

Ithaca, NY 14850

Fall 1980 ug enrollment 4,860

Degrees offered B.A. or B.S.

Telephone 607-274-3238

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE:7.75. 2. Support staff, FTE's: Sec'y 1 Stockrm 1 Technical 1
3. 1980 seniors & their placement: Total 12 Grad. school 7 Industry 3 Professional schools 1 Other 1.
4. Senior majors, average past five years: 9.
5. Undergraduates involved in research, average past five years:
   Academic year 22 Summer 21
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years: Graduate Fellowships: NSF - Karen Root, 1977-80, MIT, Chemistry; William Tumas, 1980-83, Stanford,

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 11,000
2. Instrumentation:
   1. MS (AEI MS12)
   2. NMR (HA-60IL, T-60)
   3. UV-VIS (Cary 14, Varian 634, P-E 124, Beckman DB)
   4. IR (P-E 337, 237, 137 (2))
   5. Stopped-Flow (Durrum 110, Nortech)
   6. GC (6 dual, 6 single column, 3 minigrators)
   7. AA (P-E 103)
   8. Annular Still (P-E 151)
   9. Temp. Jump (Enfield Specialty DH-1)
   10. HPLC (Altex/Kratos/Micrometrics)
3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 37 Computer literature search service? No Separate chemistry or science library? Yes Librarian? Yes Standing orders for review series and annual reviews (past five years) 31.
4. Computer facilities: Departmental: PDP/8-e; Cromemco Z-2.
   Campus: Univac Series 70/46

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: $6,000 plus
2. Departmental grants: NSF-SSTP (Joint Physics-Chemistry) $12,380
   Union Carbide, $5,000
3. Faculty teaching loads: Contact hours 12 Load credit for research? Yes
4. Sabbatical or leave support for research: Each faculty member has taken a sabbatical leave for a full year at 50% salary every seventh year. Outside support has been obtained by individuals for remaining salary.

FACULTY PROFILE

ANDERSON, ROBERT J. (b. 1940) Associate Professor. B.S., 1962, College of St. Thomas; Ph.D., 1967, Univ. of California, Berkeley. *Physical and Analytical Chemistry*. Analytical applications of spectroscopy, computers in chemistry.

R. J. Anderson and P. R. Griffiths, "Resolution and Instrument Line Shape Effects on Spectral Compensation with Fourier Transform Infrared Spectrometers," Anal. Chem., 50, 1804 (1978).

R. J. Anderson and P. R. Griffiths, "Determination of Rotational Temperatures of Diatomic Molecules from Absorption Spectra Measured at Moderate Resolution," J. Quant. Spectrosc. Radiat. Transfer, 17, 393 (1977).

BERGMARK, WILLIAM R. (b. 1940) Professor. B.A., 1962, St. Olaf College; Ph.D., 1966, Massachusetts Institute of Technology. *Organic Chemistry*. Organic chemistry and photochemistry.

Six publications, 1976-80.

G. Jones, II, W. R. Bergmark, and A. M. Halpern, "Mechanism of Photocycloaddition in α,ω-Bis-(9-anthryl)-n-alkanes," Chem. Phys. Lett., 00, 000 (1980).

W. R. Bergmark and G. Davon Kennedy*, "The Lack of Photoreactivity for an ortho-tert.-Butylvalerophenone," Tet. Letters, 17, 1485 (1979).

W. R. Bergmark, G. Jones, II, T. E. Reinhardt, and A. M. Halpern, "Photoisomerization of Bis(9-anthryl)methane and Other Linked Anthracenes. The Role of Excimers and Biradicals in Photoisomerization," J. Amer. Chem. Soc., 100, 665 (1978).

W. R. Bergmark, "Photolysis of α-Chloro-*o*-methylacetophenones," J. Chem. Soc., Chem. Commun., 61 (1978).

G. Jones, II, W. R. Bergmark, T. E. Reinhardt, "Photon Energy Storage in Organic Materials: The Case of Linked Anthracenes," Solar Energy, 20, 241 (1978).

Grant: Research Corporation, Cottrell College Science Grant, "New Aspects and Applications of Photoenolization," 1979-80, $4,200.

DARROW, FRANK W. (b. 1940) Associate Professor. B.A., 1961, Williams College; Ph.D., 1965, University of Pennsylvania. *Physical Chemistry*. Problems in general and chemical education, history and philosophy of science, properties of electrolyte solutions and fused salt systems.

EBERHARD, ANATOL (b. 1938) Associate Professor. B.A., 1959, Univ. of California, Berkeley; M.A., 1960, Ph.D., 1964, Harvard University. *Organic and Biochemistry*. Bacterial bioluminescence, trace lipids.

A. Eberhard, A. L. Burlingame, C. Eberhard, G. L. Kenyon, K. H. Nealson, and N. J. Oppenheimer, "Identification of the Autoinducer of *Photobacterium fischeri* Luciferase," Biochemistry (in press).

A. Eberhard, C. Eberhard, A. L. Burlingame, G. L. Kenyon, N. J. Oppenheimer, and K. H. Nealson, "Purification, Identification and Synthesis of *Photobacterium fischeri* Autoinducer," in "A Symposium on Bioluminescence and Chemiluminescence: Basic Chemistry and Analytical Applications" (M. DeLuca and W. D. McElroy, eds.), Academic Press, NY, in press.

A. Eberhard, J. P. Hinton* and R. M. Zuck,* "Luminous Bacteria Synthesize Luciferase Anaerobically," Arch. Microbiol., 121, 277 (1979).

Grant NSF 69A Grant, "Equipment for Study of Bacterial Bioluminescence," 1980, $23,400.

GIBBS, ESTHER J. (b. 1949) **Instructor.** B.A., 1971, Ithaca College; M.S., 1980, Pennsylvania State University. *Biophysical Chemistry.* Fast reaction techniques, metalloporphyrin-DNA interactions, redox reactions, structure-function relationships of metalloenzymes.

E. Gibbs, W. R. Skowronek Jr.,* W. T. Morgan, U. Muller-Eberhard, R. F. Pasternack, "Reactions of Water-Soluble Metalloporphyrins with the Serum Protein, Hemopexin," J. Amer. Chem. Soc., 102, 3939 (1980).

R. F. Pasternack and E. G. Spiro, "Study of the Kinetics of Reduction of an Iron(III) Porphyrin by Hexaammineruthenium(II). Estimate of the Self-Exchange Rate for a High-Spin Iron Porphyrin Complex," J. Amer. Chem. Soc., 100, 968 (1978).

J. C. Kwak, M. J. Morrison, E. G. Spiro, K. Iwasa, "Mean Activity Coefficients for the Simple Electrolyte in Aqueous Mixtures of Polyelectrolytes and Simple Electrolytes. The Mixed Counterion System Na^+, Ca^{+2}, Cl^-, and Polystyrene Sulfonate," J. Phys. Chem., 80, 2753 (1976).

HUGHES, LOU J. (b. 1928) Assistant Professor. B.S., 1951, University of Minnesota; M.S., 1953, Ph.D., 1971, Cornell University. *Biophysical Chemistry.* Polymers, biophysical chemistry.

L. J. Hughes, J. J. Stezowski, and R. E. Hughes, "Chemical-Structural Properties of Tetracycline Derivatives. 7. Evidence for the Coexistence of the Zwitterionic and Non-ionized Forms of the Free Base in Solution," J. Amer. Chem. Soc., 101, 7655 (1980).

L. J. Hughes, J. W. Frank* and A. T. Wilson*, "Origin of Life: An Interdisciplinary Course in Chemical Evolution for Undergraduates," J. Chem. Ed., 55, 521 (1978).

KOCH, HEINZ F. (b. 1932) Professor. B.S., 1954, M.S., 1955, Haverford College; Ph.D., 1960, Cornell University. *Organic Chemistry.* Physical organic, kinetic isotope effects, mechanisms of elimination reactions, nucleophilic reactions of alkenes.

H. F. Koch, J. G. Koch, W. Tumas*, D. J. McLennan, B. Dobson, G. Lodder, "Use of Kinetic Isotope Effects in Mechanism Studies. 3. Measurement of Hydrogen Isotope Effects on the Primary Chlorine Isotope Effect During Elimination Reactions," J. Amer. Chem. Soc., 102, 7955 (1980).

H. F. Koch and D. B. Dahlberg, "Use of Kinetic Isotope Effects in Mechanism Studies. The Effect of an Internal Return Mechanism on the Arrhenius Behavior of Primary Hydrogen Isotope Effects," J. Amer. Chem. Soc., 102, 6102 (1980).

H. F. Koch, D. B. Dahlberg, M. F. McEntee*, C. J. Klecha*, "Use of Kinetic Isotope Effects in Mechanism Studies. Anomalous Arrhenius Parameters in the Study of Elimination Reactions," J. Amer. Chem. Soc., 98, 1060 (1976).

Grants: Research Corporation, Cottrell College Science Grant, "Mechanisms of Elimination Reactions," 1980, $7,600. NATO Travel Grant, 1980-81, $6,000.

KOCH, JUDITH G. (b. 1937) Assistant Professor. B.A., 1959, Ph.D., 1972, Cornell University. *Organic Chemistry.* Nuclear magnetic resonance.

H.F. Koch, J.G. Koch, W. Tumas*, D.J. McLennan, B. Dobson, G. Lodder, "Use of Kinetic Isotope Effects in Mechanism Studies. 3. Measurement of Hydrogen Isotope Effects on the Primary Chlorine Isotope Effect During Elimination Reactions," J. Amer. Chem. Soc., 102, 7955 (1980).

PASTERNACK, ROBERT F. (b. 1936) Professor and Chairman. B.A., 1957, Ph.D., 1962, Cornell University. *Inorganic Chemistry.* Bioinorganic chemistry, fast reaction kinetics, porphyrin chemistry, superoxide chemistry.

Fifteen publications, 1976-80.

E. G. Spiro, W. R. Skowronek Jr.*, W. T. Morgan, U. Muller-Eberhard, and R. F. Pasternack, "Reactions of Water-Soluble Metalloporphyrins with the Serum Protein, Hemopexin," J. Amer. Chem. Soc., 102, 3939 (1980).

R. F. Pasternack and W. R. Skowronek Jr.*, "Catalysis of the Disproportionation of Superoxide by Metalloporphyrins," J. Inorg. Biochem., 11, 261 (1979).

R. F. Pasternack and B. Halliwell, "The Superoxide Dismutase Activities of an Iron Porphyrin and Other Iron Complexes," J. Amer. Chem. Soc., 101, 1026 (1979).

R. F. Pasternack, B. S. Gillies*, D. Liebowitz*, and J. R. Stahlbush*, "Reactions of Several Iron(III) Porphyrins with Imidazole in Dimethylsulfoxide," in Porphyrin Chemistry Advances, Chapter 23, pp. 289-99, Ann Arbor Science Publishing, Inc., 1978.

R. F. Pasternack, B. S. Gillies* and J. R. Stahlbush*, "Kinetics and Thermodynamics of the Reactions of Two Iron(III) Porphyrins with Imidazole and 1-Methylimidazole in Dimethyl Sulfoxide," J. Amer. Chem. Soc., 100, 2613 (1978).

Grants: NSF 69A Grant, "Equipment for Study of Rapid Reactions in an Anaerobic Environment," 1980, $25,000. Research Corporation, Cottrell College Science Grant, "Reactions of Superoxide Ion with Model Compounds," 1978-81, $13,500. NIH, "Fast Reactions in Solution," 1980-82, $78,719.

VOGEL, GLENN C. (b. 1943) Associate Professor. B.S., 1965, Pennsylvania State University; M.S., 1967, Ph.D., 1970, University of Illinois. *Inorganic Chemistry.* Lewis acid-base interactions, physical inorganic chemistry.

Seven publications, 1976-80.

J. T. Reinprecht*, J. G. Miller*, G. C. Vogel, M. S. Haddad, and D. N. Hendrickson, "Synthesis and Characterization of Copper(II) Squarate Complexes," Inorg. Chem., 19, 927 (1980).

D. G. Brown and G. C. Vogel, "An Efficient Halogen Atom Abstraction Reaction Facilitated by a Redox Active Ligand," Inorg. Chem., 17, 1367 (1978).

D. G. Brown, L. Beckmann, C. H. Ashby, G. C. Vogel and J. T. Reinprecht*, "Oxygen Dependent Ring Cleavage in a Copper Coordinated Catechol," Tetrahedron Lett., 16, 1363 (1977).

G. C. Vogel and J. R. Stahlbush*, "Thermodynamic Study of the Adduct Formation of Zinc Tetraphenylporphine with Several Neutral Donors in Cyclohexane," Inorg. Chem., 16, 950 (1977).

G. C. Vogel and B. A. Beckmann*, "The Binding of Pyridine to Phenyl Substituted Derivatives of Zinc Tetraphenylporphine," Inorg. Chem., 15, 483 (1976).

Grants: Research Corporation, Cottrell College Science Grant, "Model Compounds Showing Dioxygenase Activity: A Kinetic Study," 1980, $5,000.

WILCOX, MARY F. (b. 1930) Assistant Professor. B.A., 1952, Mount Holyoke College; M.S., 1954, University of Colorado; Ph.D., 1960, Cornell University. *Organic Chemistry.* Mechanisms of solvolysis reactions. (On leave 1980-81).

JUNIATA COLLEGE
Huntington, Pennsylvania 16652

Fall 1980 ug enrollment 1300
Degrees offered B.A., B.S.
Telephone 814-643-4310

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5 . 2. Support staff, FTE's: Sec'y 1/2 Stockrm 1 Technical 2/3
3. 1980 seniors & their placement: Total 16 Grad. school 6 Industry 4 Professional schools 3 Other 3 .
4. Senior majors, average past five years: 14 .
5. Undergraduates involved in research, average past five years:
   Academic year 7 Summer 7
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 21,400
2. Instrumentation:

   NMR 60 MHz (Varian T60)
   100 MHz (Varian HA 100)
   IR (P-E 283)
   Fluorescence Spectrophotometer (P-E 650-40)
   UV-Vis (Beckman 25)
   MS (DuPont 21-490)
   HPLC (Waters Associates, ALC 501)
   GC (Shimadzu, programmable, glass capillary capabilities)
   SEM (AMR 1200 B)
   X-Ray (GE XRD6)
   Liq. Scint. Counter (Picker 220)

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 28 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? Yes Standing orders for review series and annual reviews (past five years) 18 .

4. Computer facilities: Department: minicomputers--2 Data General NOVAs, floppy disks, video graphic and hard copy plotters, terminals to campus RSTS/E time-sharing system. Campus: PDP 11/34 RSTS/E time sharing.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   Chemicals $1,000 Equipment $10,000 Summer Research Program $3,000

2. Departmental grants:

   DuPont College Science Grant $7,000 Dreyfus Foundation $20,000
   General Electric $4,000 NSF Chemistry Instrumentation Program $16,500

3. Faculty teaching loads: Contact hours 15 Load credit for research? occasional

4. Sabbatical or leave support for research:

   Faculty can apply for sabbatical leave at 50% salary full year, 100% salary summer and one-third academic year.

FACULTY PROFILE

FISHER, TOM LYONS (b. 1942), Assistant Professor. B.S., 1964, Old Dominion University, Ph.D., 1970, Iowa State University. Biochemistry. Bio-organic chemistry.

B. M. Anderson and T. L. Fisher, Preparation of 3-aminopyridine adenine dinucleotide, Methods in Enzymology, Vitamins and Coenzymes, ed. D. B. McCormick, 66E:81-87, 1980.

Research grant, 1978-80, Research Corporation, $10,600, Interaction of 3-azido-1-methylpyridinium chloride with NAD-dependent enzymes.

MITCHELL, DONALD J. (b. 1938), Associate Professor and Chairman. B.S., 1960, Westminster College (PA), Ph.D., 1964 Vanderbilt University. Physical Chemistry. Structure of materials by X-ray diffraction and electron microscopy, and the gasification of coal.

Paul D. Schettler, Jr., Dale L. Wampler, Philip J. Sipling, and Donald J. Mitchell, The relationship of thermodynamic and kinetic parameters to well production in Devonian shale, Proceedings of the First Annual Gas Shales Symposium, Morgantown, WV, Oct. 1977, p. 608, Tech. Info. Center, USDOE, Publication #MERC/SP-77/5.

Paul Schettler, Dale Wampler, Donald Mitchell, William Russey, Degasification of Devonian shales, Proceedings of Seventh Appalachian Petroleum Geology Symposium. Devonian Shale Production and Potential, Morgantown, WV, Mar. 1976, p. 239, USDOE, Publication #MERC/SP-76/2.

REED, RUTH E. (b. 1946), Associate Professor. B.A., 1968, Winthrop College, Ph.D., 1974, Virginia Polytechnic Institute & State University. Biochemistry. Metabolic control and enzyme regulation in higher plants.

D. T. Tarlow, P. W. Watkins, R. E. Reed, R. S. Miller, E. E. Zwergel, and M. D. Lane, Lipogenesis and the synthesis and secretion of very low density lipoprotein by avian liver cell in nonproliferating monolayer culture: hormonal effects, J. Cell Biol., 73, 332-353(1977).

Research grant, 1978-80, Research Corporation, $14,800, Involvement of Plant Aminotransferases in Photorespiration.

RUSSEY, WILLIAM E. (b. 1939), Professor. B.A., 1961, Kalamazoo College, M.A., 1964, Harvard University, Ph.D., 1967, Harvard University. Organic Chemistry. Synthetic organic chemistry, biochemistry, coal chemistry.

Paul Schettler, Dale Wampler, Donald Mitchell, William Russey, Degasification of Devonian shales, Proceedings of Seventh Appalachian Petroleum Geology Symposium. Devonian Shale Production and Potential, Morgantown, WV, Mar. 1976, p. 239, USDOE, Publication #MERC/SP-76/2.

SCHETTLER, PAUL D., JR. (b. 1937), Professor. B.S., 1960, University of Utah, Ph.D., 1964, Yale University. Physical Chemistry. Kinetics and thermodynamics of sorption, theory of gas chromatography, gas well production; solvated electrons.

Paul D. Schettler, Jr., Gas content and transport in shale and their implications for well productivity, Proceedings of the Third Eastern Gas Shales Symposium, Morgantown, WV, Oct. 1979, Technical Information Center, USDOE, Publication #METC/SP-79/6, p. 27.

Paul D. Schettler, Jr., The implication of specific degasibility for models of gas production from shale, Proceedings of the Second Eastern Gas Shales Symposium, Morgantown, WV, Oct. 1978, Technical Information Center, USDOE, Publication #METC/SP-78/6, Vol. I, p. 370.

Paul D. Schettler, Jr., The concept of specific degasibility and its application to gas bearing tight formations as represented by the Devonian shales of Appalachia, Proceedings of the Fourth Annual DOE Symposium on Enhanced Oil & Gas Recovery & Improved Drilling Methods, Aug. 1978, Tulsa, OK, The Petroleum Publishing Co., Tulsa, OK, Vol. 2, p. G8/1.

Paul D. Schettler, Jr., Dale L. Wampler, Philip J. Sipling, and Donald J. Mitchell, The relationship of thermodynamic and kinetic parameters to well production in Devonian shale, Proceedings of the First Eastern Gas Shales Symposium, Morgantown, WV, Oct. 1977, Technical Information Center, USDOE, Publication #MERC/SP-77/5, p. 608.

Paul Schettler, Dale Wampler, Donald Mitchell, William Russey, Degasification of Devonian shales, Proceedings of Seventh Appalachian Petroleum Geology Symposium. Devonian Shale Production and Potential, Morgantown, WV, Mar. 1976, USDOE, Publication #MERC/SP-76/2, p. 239.

Research grant, 1979-80, U. S. Department of Energy, $40,000, Study of hydrocarbon-shale interaction.

WAMPLER, DALE L. (b. 1936), Professor. A.B., 1957, Bridgewater College, Ph.D., 1962, University of Wisconsin.
Inorganic Chemistry. Photochemical solar energy conversion, the application of minicomputers in chemistry, the thermodynamics and kinetics of desorption of hydrocarbons from Devonian shales, structural chemistry by single crystal X-ray diffraction techniques.

Paul D. Schettler, Jr., Dale L. Wampler, Philip J. Sipling, and Donald J. Mitchell, The relationship of thermodynamic and kinetic parameters to well production in Devonian shale, Proceedings of the First Eastern Gas Shales Symposium, Morgantown, WV, Oct. 1977, Technical Information Center, USDOE, Publication #MERC/SP-77/5, p. 608.

Paul Schettler, Dale Wampler, Donald Mitchell, William Russey, Degasification of Devonian shales, Proceedings of Seventh Appalachian Petroleum Geology Symposium. Devonian Shale Production and Potential, Morgantown, WV, Mar. 1976, USDOE, Publication #MERC/SP-76/2.

KENYON COLLEGE
Gambier, Ohio 43022

Fall 1980 ug enrollment 1451
Degrees offered BA
Telephone (614) 427-2244

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 4.25. 2. Support staff, FTE's: Sec'y 0.33 Stockrm 1.4 Technical 0
3. 1980 seniors & their placement: Total 12 Grad. school 4 Industry 1 Professional schools 6 Other 1.
4. Senior majors, average past five years: 11.
5. Undergraduates involved in research, average past five years: Academic year 9 Summer 0
6. Master's program? NO Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:
   1980 - Stephen M. Penn, NSF graduate fellowship
   1977 - Michelle M. Thomas, NSF graduate fellowship, Iota Sigma Pi National Undergraduate Award

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 23,000 (gross), 14,000 (net)
2. Instrumentation:
   NMR (Varian 360A)
   GC's (Varian 3700, Hewlett Packard 5771A)
   UV-VIS (Cary 14, Beckman DB and DU's)
   IR's (P-E337, Beckman IR8)
   Polarograph (Sargent Model XXI)
   Spectrophotofluorometer (Aminco-Bowman SPF)
   AA (Corning 240)
   pH Stat (Sargent)
   Solution calorimeter (Parr 1451)
   Electrolytic Analyzers (2, Sargent, 2 position)
3. Library resources: CA? YES Volume indices? YES Collected indices? SOME Total journal subscriptions? 27 Computer literature search service? NO Separate chemistry or science library? YES Librarian? YES Standing orders for review series and annual reviews (past five years) 20.
4. Computer facilities: Computer Center located in chemistry building; PDP 11/70 computer, 11 terminals for student use, Hewlett Packard graphics display terminal and X-Y plotter.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: about $2500/year for chemicals, projects, travel, equipment; $3940 grant from College science equipment fund.
2. Departmental grants: Lubrizol Grant ($600); Spectroscopy Society of Pittsburgh ($2200); Union Carbide ($2000)
3. Faculty teaching loads: Contact hours 15 Load credit for research? 0
4. Sabbatical or leave support for research: Half-salary for academic year or full-salary for one semester, every seven years.

FACULTY PROFILE

BATT, RUSSELL H. (b.1938) Associate Professor. B.S., 1960, University of Rochester, Ph.D., 1964, University of California at Berkeley. Physical Chemistry. Applications of Computers to science education; applications of Piagetian learning theory to chemical education; issues of science, technology and ethical values.

R. H. Batt, "A Piagetian Learning Cycle for Introductory Chemical Kinetics", J. Chem. Educ., 57, 634 (1980).

JOHNSON, GORDON L. (b. 1932) Professor. B.S., 1954, Ohio University, Ph.D., 1958, University of Illinois. Physical Inorganic Chemistry. Kinetics and mechanisms of reactions of coordination compounds; metal ions in biological systems; spectra of coordination compounds.

G. L. Johnson, L. U. Gilpatrick, G. P. Smith, "Spectroscopic Investigation of the Complexation of Titanium in Borate Melts", U. S. Bureau of Mines Report, July, 1976.

G. L. Johnson and L. M. Toth, "Plutonium (IV) and Thorium (IV) Hydrous Polymer Chemistry", ORNL/TM-6365 National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161, May, 1978.

LUTTON, JOHN K. (b.1949) Assistant Professor. B.S., 1971, Pacific Lutheran University, Ph.D., 1976, Purdue University. Biochemistry. Membrane biochemistry; isolation and characterization of hormone-stimulated adenylate cyclase from cultured mammalian cells; characterization of enzymes associated with the plasma membrane of mammalian cells.

T. K. Harden, C. U. Cotton, G. L. Waldo, J. K. Lutton and J. P. Perkins, "Catecholamine-Induced Alteration in Sedimentation Behavior of Membrane Bound Beta-Adrenergic Receptors", Science,210, 441 (1980).

J. K. Lutton, R. C. Frederich and J. P. Perkins, "Isolation of Adenylate Cyclase-enriched Membranes from Mammalian Cells Using Concanavalin A", Journal of Biological Chemistry, 254, 1181 (1979).

J. K. Lutton, R. C. Frederich, G. A. Scarborough and J. P. Perkins, "Purification of Adenylate Cyclase Using Concanavalin A", Federation Proceedings, 38, 317 (1979).

F. L. Texter, J. K. Lutton and K. G. Brandt, "Steady-State Kinetic Studies of the Lipoamide Dehydrogenase Component within the Pig Heart Pyruvate Dehydrogenase Complex", Federation Proceedings, 36, 875 (1977).

K. G. Brandt and J. K. Lutton, "Kinetic Studies of the Effect of Adenosine Diphosphoribose on Pig Heart Lipoamide Dehydrogenase", Flavins and Flavoproteins, Fifth International Symposium, 478, Elsevier (1976).

KENYON COLLEGE

PAPPENHAGEN, JAMES M. (b. 1926) Professor and Chairman. B.S., 1949, Mount Union College, M.S., 1951, Purdue University, Ph.D., 1953, Purdue University. *Analytical Chemistry*. Determination of ions in wastes and waters; study of ternary coordination complexes; study of specific ion electrode processes; absorption spectroscopy; environmental chemistry.

J. M. Pappenhagen,Chapter 12, "Sulfur", in "Colorimetric Determination of Nonmetals", edited by D. F. Boltz and J. A. Howell, second edition, John Wiley and Sons, Inc., 1978

YORK, OWEN, JR., (b. 1927) Professor. B.A., 1948, Evansville, M.S., 1950, University of Illinois, Ph.D., 1952, University of Illinois. *Organic Chemistry*, *Biochemistry*. Reaction mechanisms; autoxidation; alkenes and aromaticity; polymers; organometallics; natural products; carbohydrates.

KING'S COLLEGE
Wilkes-Barre, Pennsylvania 18711

Fall 1980 ug enrollment 1747
Degrees offered A.B., B.S.
Telephone (717) 826-5900
Ext. 730 - 731

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5. 2. Support staff, FTE's: Sec'y 1 Stockrm 1 Technical 0
3. 1980 seniors & their placement: Total 10 Grad. school 6 Industry 3 Professional schools 1 Other 0.
4. Senior majors, average past five years: 6.
5. Undergraduates involved in research, average past five years:
   Academic year 5 Summer 2
6. Master's program? 0 Master's degrees conferred, average past five years: 0
7. National honors, undergraduate or senior majors, past five years:

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 12,256
2. Instrumentation:
   NMR (P-E R-12)
   EPR (Varian E-4)
   AA (P-E 305-A)
   X-Ray (Picker 3488)
   ThermoAnalyzer: DSC-DTA (P-3 1B)
   TGA (P-E 1)
   IR (Beckman IR20-A)
   MS (Varian EM600)
   Laser Raman (Beckman with Coherent Rad. Model 54 argon Laser)
   Spectrofluorimeter (Turner 430)
   HPLC (Beckman 330)
3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 50 Computer literature search service? No Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 50.
4. Computer facilities:
   Department: CRT Terminal, Apple II and TRS 80 microcomputers
   Campus: IBM 370-4331

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   $3000/year (Chemicals and glassware) $4000/year for equipment
2. Departmental grants:
   NSF CAUSE Grant $150,700, Computer applications in Undergraduate Science Education (1978-1981)
   NSF, $20,000, Current methods in biology and chemistry (1980-1981)
3. Faculty teaching loads: Contact hours 12 Load credit for research? No
4. Sabbatical or leave support for research:
   Faculty can apply for sabbatical leave at 50% salary full year, full salary for 1/2 year. Frequency averages every 7th year.

FACULTY PROFILE

BORKOWSKI, RAYMOND P. (b. 1934) Professor. B.S., 1955 King's College; Ph.D., 1961 Catholic University of America. Physical Chemistry. Use of ESR to quantitatively monitor the concentration of paramagnetic species in aqueous solutions and the effect of various environmental factors on the luminescence of rare earth complexes dissolved in liquid media.

KAZLAUSKAS, CLEMENT L. (b. 1921) Department Chairman, Associate Professor. B.S., 1950 University of Scranton; M.S., 1952 Boston College. Organic Chemistry. Synthesis and structure determination.

MITRA, GRIHAPTI (b. 1927) Professor. B.S., 1947 University of Calcutta; M.Sc., 1949 University of Calcutta; D.Sc., 1954 University of Calcutta.

*R. Mitra, *T. P. McAndrew, and G. Mitra, "Study of the Red Peroxovanadium Complex in Acidic Media by EPR", Journal of Inorganic and Nuclear Chemistry, in press.

*R. Ritchie and G. Mitra, "Preparation and Properties of Potassium Pentefluorodioxo-Tungstate (V_1) $K_3WO_2F_5$ and Potassium Octofluorpenteoxo-Ditungstate (V_1) $K_6W_2O_5F_8$", Journal of Fluorine Chemistry, 10, 405 (1977).

*D. Foose and G. Mitra, "On the Structure of $CsHScO_4$", Journal of Inorganic and Nuclear Chemistry, 39, 553 (1977).

*D. Foose and G. Mitra, "Structure of Tetramethylammonium Fluorosulfate $N(CH_3)_4SO_3F$(VI)", Journal of Fluorine Chemistry, 7, 551 (1976).

SAULS, FREDERICK C. (b. 1947) Assistant Professor. B.S., 1969 Franklin and Marshall College; M.S., 1974 University of Pittsburgh; Ph.D., 1974 University of Pittsburgh. Analytical Chemistry. Application of newer methods of analysis to problems of forensic interest; kinetics of transition-metal complexation reactions; application of computers to chemical education.

M. Wartell, F. Sauls, Introduction to Criminalistics, J. Chemical Education, 53, (1976).

SMITH, FRANCIS X. (b. 1945) Assistant Professor. B.S., 1967 Lowell Technological Institute; M.S., 1969 Lowell Technological Institute; Ph.D., 1972 Tufts University. Organic synthesis, chemistry of heterocyclic compounds, bio-organic chemistry.

*C. F. Nutaitis, *R. A. Schultz, *J. Obaza, and F. X. Smith, "Reduction of Isopropylidene Acylmalonates, 5-Acylbarbituric Acids, and 3-Acyl-4-Hydroxycoumarins to the Corresponding Alkyl Derivatives by Sodium Cyanoborohydride-Acetic Acid, Journal of Organic Chemistry, in press.

*M. L. Haslego and F. X. Smith, "Conjugate Addition of Grignard Reagents to Substituted Isopropylidene Methylenemalonates, Synthetic Communications, 10, 421 (1980).

*A. Scoville and F. X. Smith, "A Malonic Ester Type Synthesis with 4-Chloroquinoline Utilizing Highly Acidic Enols", Journal of Heterocyclic Chemistry, 14. 1081 (1977).

*A. Wright, *M. L. Haslego and F. X. Smith, "Borohydride Reduction of Substituted Isopropylidene Methylenemalonates", Tetrahedron Letters, 2325 (1979).

G. G. Evans and F. X. Smith, "Nucleophilic Substitution on the Pyridine Ring with Enolate Anions", Journal of Heterocyclic Chemistry, 13, 1025 (1976).

Grant Active: 1976 - Rotaxanes with fluorescent end groups, Research Corporation Cottrell College Science Grant, $2,000.

KNOX COLLEGE
Galesburg, IL 61401

Fall 1980 ug enrollment 951
Degrees offered B.A.
Telephone (309) 343-0112

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 4 3/4. 2. Support staff, FTE's: Sec'y 1/4 Stockrm 1 Technical 1/4
3. 1980 seniors & their placement: Total 18 Grad. school 5 Industry 10 Professional schools 2 Other 1.
4. Senior majors, average past five years: 22.
5. Undergraduates involved in research, average past five years:
   Academic year 5 Summer 1
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   N/A

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 30,000
2. Instrumentation:

   NMR Varian T-60
   IR Perkin-Elmer M727
   G.C. Variety of Five Instruments
   UV-Vis Heath M-703
   Centrifuge Damon M-CKU 5000
   ESR Varian V4500
   AA Varian MAA-275
   Spectrofluorimeter Varian SF-330
   And others

3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 18 Computer literature search service? yes Separate chemistry or science library? yes Librarian? yes Standing orders for review series and annual reviews (past five years) 12.

4. Computer facilities: Campus; PDP-11
   Dept. Jade Microcomputer
   Wang M-600

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Approx. $1,000/yr.

2. Departmental grants:

Johnson Wax Fund	$ 2,500
ISEP - NSF	$17,000
EVIST - NSF	$17,000

3. Faculty teaching loads: Contact hours 12 Load credit for research? Nil.

4. Sabbatical or leave support for research: Faculty can apply for sabbatical leave at half salary for full year or for shorter periods with more than half salary. Frequency has averaged one faculty member on sabbatical leave every fifth year for the last 20 years.

FACULTY PROFILE

HARRIS, LELAND (b. 1923) Professor. B.S., 1950, University of Michigan, Ph.D., 1955, State University of Iowa. Organic Chemistry. Diels-Alder syntheses with cinnamic acids and photosynthesis.

Eskins, K. and L. Harris. High-performance liquid chromatography etioplast pigments in red kidney bean leaves. Photochem. Photobiol. In press.

Eskins, K., L. Harris and R.L. Bernard. Genetic control of chloroplast pigment development in soybeans as a function of leaf and plant maturity. Journal of Plant Physiology. In press.

HIEBERT, ALLEN G. (b. 1941) Associate Professor. B.A., 1963, Tabor College, Ph.D., 1967, University of Illinois. Analytical Chemistry. Interfacing of microcomputers with instrumentation. Dreyfuss Foundation Grant, $10,000/yr.

KOOSER, ROBERT G. (b. 1941) Associate Professor. B.A., 1963, St. Olaf College, Ph.D., 1968, Cornell University. Physical Chemistry. Electron spin resonance. EVIST - $17,000. ISEP - NSF - $17,000.

Clarkson, R.B. and R.G. Kooser, Molecular Motion on Surfaces as Investigated by Saturation Transfer EPR, Surface Science, 74, 325 (1978).

Kooser, R.G. Electron Spin Relaxation Mechanisms and Solvent Coordination in Bis (dithiooxalato) nitrosyliron (I) Solutions, J. Phys. Chem., 80,1601 (1976).

NEUMILLER, HARRY J. (b. 1929) Associate Professor and Registrar. B.A., 1951, Knox College, Ph.D., 1956, University of Illinois. Organic Chemistry. Quinoneimides.

SUTTON, RUSSELL (b. 1929) Professor and Chairman. B.S., 1951, University of Missouri, Ph.D., 1955, State University of Iowa. Organic Chemistry. Reactions of Chalcones and 1-Alkyl-1-methylolcycloalkanes.

LAFAYETTE COLLEGE
Easton, PA 18042

Fall 1980 ug enrollment 2080
Degrees offered AB,BS
Telephone (215) 253-6281

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 9.5. 2. Support staff, FTE's: Sec'y 0.5 Stockrm 1 Technical 0
3. 1980 seniors & their placement: Total 11 Grad. school 3 Industry 3 Professional schools 0 Other 5.
4. Senior majors, average past five years: 19.
5. Undergraduates involved in research, average past five years:
   Academic year 6 Summer 2
6. Master's program? no Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   None.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 22,000
2. Instrumentation:
   NMR-60 MHz (Varian EM-360A)
   IR (PE-299, Unicam SP-1000)
   UV-Vis (Varian DMS 90, Beckman DK-2, DK-2A)
   GC (F&M 700, Aerograph 204, 2 ea. Carle 8500)
   Electroanalyzer (Fisher 40)
   Light Scattering (Wood 6000)
   Electrobalance (Cahn RG)
   DTA, AA, X-Ray diffraction available in other depts.
   Polarograph (P.A.R. 174a)
3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 51 Computer literature search service? yes Separate chemistry or science library? no Librarian? no Standing orders for review series and annual reviews (past five years) 15.
4. Computer facilities: Campus; Hewlett Packard 3000 time sharing with data terminal in Department.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   Campus $20,000/yr; departmental budget est. $2,000 plus use of regular departmental teaching equipment.
2. Departmental grants:
   DuPont College Science Grant, $7,000; NSF-URP, $12,000; National Starch and Chemical Co., $500.
3. Faculty teaching loads: Contact hours 12 Load credit for research? no
4. Sabbatical or leave support for research: Faculty may apply for sabbatical leave at full salary for a semester or for a year at 50% of salary after seven years. Junior faculty leaves are also available.

FACULTY PROFILE

COOK, ROBERT C. (b. 1947) Assistant Professor. B.S., 1969 Lafayette College, M.Ph., 1971, Ph.D., 1973, Yale University. *Physical Chemistry*. Theory of simple solid and liquid systems, defects in solids; statistical mechanics of model polymer systems, polymer conformational analysis; polymer synthesis.

R. Cook and *M. Moon, Equilibrium Properties of Flexible Polymer Chains, accepted for publication in *Macromolecules*.

R. Cook, Poly(2-Ethyl-2-n-Butyl Trimethylene Sulfone), *J. Poly. Sci. A-1*, *16*, 3001 (1978).

R. Cook and *A. Shuldiner, The Free Energy of Vacancy Pairs, *J. Chem. Phys.*, *69*, 4114 (1978).

R. Cook and *M. Moon, Configurational Properties of Flexible Polymer Chains, *Macromolecules*, *11*, 1054 (1978).

R. Cook and *D. Negri, The Free Energy of a Vacancy, *J. Chem. Phys.*, *66*, 3917 (1977).

Grants: 1980, PRF, $13,000; 1980, Research Corporation, $6,400.

CROCKET, DAVID S. III (b. 1931) Associate Professor. A.B., 1952 Colby College, M.S., 1953, Ph.D., 1960, University of New Hampshire. *Inorganic Chemistry*. Chemistry of transition metal fluorides.

HAENDLER, BLANCA L. (b. 1948) Assistant Professor. B.A., 1969, Goucher College, Ph.D., 1974, The Johns Hopkins University. *Physical Chemistry*. Heterogeneous catalysis: mechanistic studies of gas-solid reactions; thermal decompositions of complex inorganic compounds.

Blanca L. Kugler and John W. Gryder, Investigation of the Mechanism of Propylene Oxidation on Zinc Oxide, *J. Catalysis*, *44*, 126 (1976).

Blanca L. Haendler, Centrifugal Force and the Bohr Model of the Hydrogen Atom, *J. Chem. Educ.*, in press.

JAMES, LAYLIN K. (b. 1927) Professor and Department Head. B.S., 1950, M.S., 1952, University of Michigan, Ph.D., 1958, University of Illinois, *Physical Chemistry*. Surface chemistry, physical biochemistry.

L. K. James and P. Sherman, Creep Compliance Studies of Egg Yolk Lipoprotein Interfacial Films, *Biorheology*, *13*, 79 (1976).

MILLER, THOMAS G. (b. 1924) Professor. A.B., 1948, Miami University, M.S., 1949, Ph.D., 1951, University of Illinois. *Organic Chemistry*. Clathrate compounds, reactions of 2,5-cyclohexadien-1-one derivatives.

T. G. Miller and *R. C. Hollander, 4-(Dichloromethyl)-4-methyl-2,5-cyclohexadien-1-one Phenylhydrazone. Reaction with Bases and Conversion to 5-Methyl-2-phenyl-2H-indazole, *J. Org. Chem.*, *45*, 1334 (1980).

NEWLAND, ROBERT J. (b. 1946) Assistant Professor. B.A., 1968, Kalamazoo College, Ph.D., 1974, Wayne State University. *Organic Chemistry*. New synthetic methods, carbanion chemistry, medicinal chemistry.

SHERMA, JOSEPH A. (b. 1934) Professor. B.S., 1955, Upsala College, Ph.D., 1959, Rutgers University. Analytical Chemistry. Liquid chromatographic analysis of inorganic and organic compounds and pesticide residues.

Thirty-two articles, eight books, 1975-1980.

J. Sherma and *Deborah Ann Gray, Quantitation of Caffeine in Beverages by TLC Densitometry - A Short Experiment, Amer. Lab., 11 (10) 21 (1979).

J. Sherma, Instrumentation Quality Assurance Manual, for the Consumer Product Safety Commission, Assoc. of Official Analytical Chemists, October, 1979.

J. C. Touchstone and J. Sherma, Chromatographic Techniques, in Laboratory Medicine, G. J. Race, editor, Harper & Row, 1979.

G. Zweig and J. Sherma, Biennial Review of Paper and Thin Layer Chromatography, Anal. Chem., 52, 267R (1980).

J. Sherma and *N. J. Miller, Quantitation of the Triazine Herbicides Atrazine and Simazine in Water by Thin Layer Chromatography with Densitometry, J. Liquid Chromatography, 3, 901 (1980).

WALTERS, LEE R. (b. 1928) Assistant Professor. B.S., 1954, Bucknell University, Ph.D., 1958, University of Kansas. Organic Chemistry. Reactions of Reissert compounds.

L. R. Walters, The Hydrocarbon Puzzle, The Baker Street Journal, new series, 28 (4), 222 (1978).

L. R. Walters, The Great Experiment, The Baker Street Journal, new series, in press.

WALSH, JERRY L. (b. 1948) Assistant Professor. B.S. Chem. E., 1970, M.S., 1975, Ph.D., 1977, University of Wisconsin. Inorganic Chemistry. Synthetic transition metal chemistry, photochemical substitution reactions.

B. Durham, J. L. Walsh, C. L. Carter, and T. J. Meyer, Synthetic Applications of Photosubstitution Reactions of Polypyridyl Complexes of Ru(II), Inorg. Chem., 19, 860 (1980).

J. L. Walsh, R. M. Bullock, and T. J. Meyer, Alkyl Nitrite Complexes of Ruthenium Prepared by Acid-Base Chemistry at the Bound Nitrosyl Group, Inorg. Chem., 19, 865 (1980).

F. R. Keene, D. J. Salmon, J. L. Walsh, H. D. Abruna, and T. J. Meyer, Oxidation of the Ligand in Nitro Complexes or Ruthenium(III), Inorg. Chem., 19, 1896 (1980).

J. L. Walsh, J. A. Baumann, and T. J. Meyer, Rate of Electron Self-Exchange Between Delocalized Clusters $Ru_3O(CH_3CO_2)_6(py)_3^{+}$ and 0, Inorg. Chem., 19, 2145 (1980).

H. D. Abruna, J. L. Walsh, T. J. Meyer, and R. W. Murray, Can Chemical Reactivity Patterns on Chemically Modified Electrode Surfaces be Anticipated from Solution Reactivity? A Study of Ruthenium Nitro Complexes, J. Amer. Chem. Soc., 102, 3272 (1980).

Grants: 1980, Research Corporation, $7,700; 1980, NSF, $10,500.

LAKE FOREST COLLEGE
Lake Forest, Illinois 60045

Fall 1980 ug enrollment 1016
Degrees offered BA, MLS
Telephone (312) 234 3100; X352

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5 . 2. Support staff, FTE's: Sec'y 0.33 Stockrm 0 Technical 0.33
3. 1980 seniors & their placement: Total 7 Grad. school 3 Industry 2 Professional schools 2 Other 0 .
4. Senior majors, average past five years: 9 .
5. Undergraduates involved in research, average past five years:
   Academic year 3 Summer 1
6. Master's program? no Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:
   N/A

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft² 14,430
2. Instrumentation:

NMR (Varian 360A)
MS (Varian M66)
GC's (Varian Aerograph 1200 & A700)
Beckman GC2A, Sargent TC)
HPLC (Beckman/Altex 330)

IR's (Beckman Acculab 8, IR4, IR5A)
AA (Beckman 495)
UV-Visible (Beckman DB, DU)
Pacific Photometric Component Spectrophotometer
Polarograph (Sargent XV)

3. Library resources: CA? yes Volume indices? no Collected indices? no Total journal subscriptions? 16 Computer literature search service? yes Separate chemistry or science library? yes Librarian? no Standing orders for review series and annual reviews (past five years) 11 .

4. Computer facilities: Department; 2 North Star Horizons, 32K; (+ 4 available on shared basis with Physics); digitizer, digital plotter; PET
   Campus; DEC 11/44 time-sharing system

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   About $2,500/yr for expendables and small pieces of specialty equipment. Some small amounts for students' summer living expenses.
2. Departmental grants:
   NSF 69A, $24,860; NSF CAUSE (all sciences), $250,000

3. Faculty teaching loads: Contact hours 11.5 Load credit for research? no

4. Sabbatical or leave support for research:
   After six years of teaching, one year at 3/4 salary or one half-year at full after three years of teaching, one semester at 3/4 salary.

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FACULTY PROFILE

COUTTS, JOHN W. (b. 1923) Professor and Chairperson. B.Sc.(Hons.), 1945, University of Manitoba, M.Sc., 1947, University of Manitoba, Ph.D., 1950, Purdue University. Physical Chemistry. Spectroscopy, phase studies.

G. J. Janz, J. W. Coutts et al., "Raman Spectrum of Propylene Carbonate", Spectrochim. Acta, 35A, 175 (1979).

G. J. Janz, J. W. Coutts et al., "Raman Studies of Sulfur-Containing Anions in Inorganic Polysulfides. Barium Trisulfide", Inorg. Chem., 8, 1751 (1976).

G. J. Janz, J. W. Coutts, et al., "Raman Studies of Sulfur-Containing Anions in Inorganic Polysulfides. Potassium Polysulfides", Inorg. Chem., 8, 1755 (1976).

G. J. Janz, J. W. Coutts, et al., "Raman Studies of Sulfur-Containing Anions in Inorganic Polysulfides. Sodium Polysulfides", Inorg. Chem., 8, 1759 (1976).

KLINGBEIL, LAURA K. (b. 1926) Instructor. B.S., 1955, University of Detroit, M.S., 1960, Michigan State University. Organic Chemistry. Organic Synthesis.

MARTIN, WILLIAM B. (b. 1926) Professor. A.A., 1948, York Junior College, B.S., 1950, Franklin and Marshall College, Ph.D., 1954, Northwestern University. Organic and Biochemistry. Heterocycles, enzyme inhibition.

SHOER, LARRY I. (b. 1951) Assistant Professor. B.A., 1973, Williams College, M.A., 1975, Princeton University, Ph.D., 1979, Princeton University. Analytical and Inorganic Chemistry. Organometallics and Computer-Controlled Instrumentation.

L. I. Shoer, K. I. Gell, and J. Schwartz, "Mixed-Metal Hydride Complexes Containing Zr-H-Al Bridges. Synthesis and Relation to Transition-Metal-Catalyzed Reactions of Aluminum Hydrides", J. Organomet. Chem., 136, C19 (1977).

L. I. Shoer and J. Schwartz, "Reduction of Carbon Monoxide to Linear Alcohols by Aluminum Hydrides and Zirconium Complex Catalysts at Room Temperature", J. Am. Chem. Soc., 99, 5831 (1977).

D. Carr, M. Yoshifugi, L. Shoer, K. Gell, and J. Schwartz, "Transmetalation: Organic Synthesis via Transfer of Organic Groups from One Metal to Another", Annals of the New York Academy of Sciences, 295, 127 (1977).

THOMPSON, MARTIN L. (b. 1935) Professor. B.A., 1956, Concordia College, Ph.D., 1964, Indiana University. Inorganic Chemistry. Main group synthesis, especially phosphorus and nitrogen compounds, and carboranes.

M. L. Thompson, "Silyl-Group Exchange Between Chlorosilane and N-Methyldisilazane", Inorg. Chem., 18, 2939 (1979).

C. C. Chang, R. Curtis Haltiwanger, M. L. Thompson, H. J. Chen, and Arlan D. Norman, "The Structural Characterization of trans-2,4-Dithio-2,4-Bis(anilino)-1,3-Diphenyl-1,3,2,4-Diazadiphosphetidine: $[(C_6H_5NH)\ P\ (S)\ NC_6H_5]_2$, Inorg. Chem., 18, 1899 (1979).

M. L. Thompson, R. C. Haltiwanger and A. D. Norman, "Synthesis and X-ray Structure of a Dinuclear Cyclodiphosph (III) azane", Chem. Comm., 647 (1979).

LAWRENCE UNIVERSITY

Appleton, WI 54912

Fall 1980 ug enrollment 1136

Degrees offered B.A.

Telephone (414) 739-3681

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5 . 2. Support staff, FTE's: Sec'y 1/3 Stockrm 1 Technical 0
3. 1980 seniors & their placement: Total 4 Grad. school 1 Industry 2 Professional schools 1 Other 0 .
4. Senior majors, average past five years: 12 .
5. Undergraduates involved in research, average past five years:
   Academic year 8-9 Summer 2-3
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 21,000
2. Instrumentation:

   NMR - Perkin-Elmer R12-B
   IR - Perkin-Elmer 137 & 337
   UV/visible - Cary 14; Beckman DU w/Digital Absorbance Unit
   Mass Spectroscopy - Varian EM-600
   Atomic Absorption Spectrophotometer, Perkin-Elmer 380
   Gas Chromatographs (3)
   Liquid Scintillation Counter (Beckman LS-230)
   High-Speed Refrigerated Centrifuge, Lourdes Betafuge

3. Library resources: CA? No* Volume indices? No* Collected indices? No* Total journal subscriptions? 24* Computer literature search service? No Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 12 .

*Lawrence students & faculty have access to C.A. & the extensive holdings of the Institute of Paper Chemistry on its adjacent campus.

4. Computer facilities:
   1. DEC PDP 11/70 time sharing system, 25 terminals.
   2. DEC MINC laboratory computer.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: $2000, including a portion of the departmental budget allocated to research & several internal grants to individual faculty members.

2. Departmental grants: (list Dreyfus, Du Pont, NSF-URP, NSF, ISEP, etc.) along with dollar amounts: NSF NSF-ISEP, $6200 atomic absorption; Johnson's Wax Fund, $2,500; NSF-CAUSE, $228,000, shared grant between several departments for computer instrumentation.

3. Faculty teaching loads: Contact hours 10 Load credit for research? No

4. Sabbatical or leave support for research: Seventy percent of salary for full year; eligible every seven years. Sabbaticals can also be spread over three years taking one term of three each year with the 70% base figure proportioned accordingly.

FACULTY PROFILE

EVANS, JAMES S. (b. 1941) Associate Professor. B.S., 1962, Bates College, M.A., 1964, Ph.D., 1966, Princeton University. Physical and Inorganic Chemistry. Coordination compounds, sulfate complexes; computer-controlled instrumentation; chemistry of noble metals; nuclear chemistry.

R. M. Rosenberg and J. S. Evans, Solutions Manual to accompany Principles of Physical Chemistry, by R. M. Rosenberg, Oxford University Press, 1977.

*C. Reiser and J. S. Evans, Digital Interface for Remote Control of a Cary 14 Spectrophotometer, Rev. Sci. Instrum., 47, 1216 (1976).

JOEL, PETERANNE B. (b. 1935) Assistant Professor. B.A., 1956, Keuka College, M.A., 1957, Ph.D., 1961, Radcliffe College. Biochemistry.

C. D. Joel, *R. S. Jerde, P. B. Joel, *G. Peterson, *J. R. Stroemer, and *R. O. Haight, Vertebrate and Invertebrate Central Nervous System Fatty Acid Patterns, Trans. Am. Soc. Neurochem., 7, No. 1, 128 (1976).

JOEL, CLIFFE D. (b. 1932) Associate Professor. B.A., 1953, Pomona College, M.A., 1955, Ph.D., 1959, Harvard University. Biochemistry. Biochemistry of lipids, chemistry of the nervous system, particularly retinal degeneration.

C. D. Joel, "Fat", World Book Encyclopedia, F55 (1979). Field Enterprises Educational Corporation, Chicago.

C. D. Joel, *S. J. Briggs, *M. A. Kahlow, *T, J. Sievert, and *G. K.-W. Tsang, Prolonged Exposure to Light Causes Loss of Docosahexaenoic Acid in Retins, Trans. Am. Soc. Neurochem. 11, No. 1, 290 (1980).

C. D. Joel, *J. Hansen, *R. Jerde, *J.Marini, and *B. Shefrin, Central Nervous System Fatty Acid Patterns in Water-Based Invertebrates, Trans, Am. Soc. Neurochem., 9, No. 1, 112 (1978).

C. D. Joel, *R. S. Jerde, P. B. Joel, *G. Peterson, *J. R. Stroemer, and *R. O. Haight, Vertebrate and Invertebrate Nervous System Fatty Acid Patterns, Trans. Am. Soc. Neurochem., 7, No. 1, 128 (1976).

Grant Active 1980-82. Research Corporation, $12,400, Possible Chemical Mechanisms of Damage in Retinal Rod Outer Segments.

LOKENSGARD, JERROLD P. (b. 1940). Associate Professor. B.A., 1962, Luther College, M.A., 1964, Ph.D., 1967, University of Wisconsin. Organic Chemistry. Synthesis of natural products, insect defensive compounds; new synthetic reactions.

J. P. Lokensgard, *P. B. Comita, and *K. M. Rowland, Jr., The Preparation of 2-Oxazolines from Lactones, J. Org. Chem., 42, 1467 (1977).

ROSENBERG, ROBERT M. (b. 1926) Professor and Department Chairman. B.S., 1947, Trinity College, Ph.D., 1951, Northwestern University. Physical Chemistry. Physical Chemistry of proteins, conformational changes on denaturation, subunit interactions in enzymes, enzyme kinetics.

R. M. Rosenberg, The Principles of Physical Chemistry, Oxford U. Press, New York, 1977.

R. M. Rosenberg and J. S. Evans, Solutions Manual to accompany Principles of Physical Chemistry, Oxford U. Press, 1977.

WEST, ALLEN C. (b. 1930) Associate Professor. A.B., 1957, Princeton University Ph.D., 1961, Cornell University. Analytical Chemistry. Fundamental aspects of flame spectroscopy; chemistry of manganese.

LEBANON VALLEY COLLEGE
Annville, PA 17003

Fall 1980 ug enrollment 884
Degrees offered B.S.
Telephone (717) 867-4411

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5. 2. Support staff, FTE's: Sec'y ½ Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 13 Grad. school 3 Industry 5 Professional schools 2 Other 3.
4. Senior majors, average past five years: 16.
5. Undergraduates involved in research, average past five years:
   Academic year 15 Summer 8
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:
   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 23,500
2. Instrumentation:
   Beckman ACTA M-IV Spec
   Bausch & Lomb 505 Spec
   Coleman UV-VIS 124 Spec
   Aminco-Brown Spectrophotofluorometer
   Waters HPLC, Model 6000A
   IR-PE457, 700A
   Hitachi-Perkin Elmer R-24 NMR
   Precision calorimeter
   Perkin-Elmer 900 Chromatograph
   Radiochemistry facilities
   PE Fluorescence Spec MFP-4
3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 32 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 5.
4. Computer facilities: Department: Hewlett-Packard 2100S, 16K core, hi-speed paper tape punch, hi-speed paper tape reader, terminal, data acquisition system, programmable clock. Campus: PDP 11/40 computer system.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   $3,600
2. Departmental grants:
   None
3. Faculty teaching loads: Contact hours 16 Load credit for research? No
4. Sabbatical or leave support for research:
   Faculty can apply for sabbatical leave at half salary full year, full salary half year.

FACULTY PROFILE

BELL, RICHARD C. (b. 1919) Assistant Professor. B.S., 1941, Lebanon Valley College, M.Ed.,1955, Temple University. General Chemistry, Chemical Education.

R. C. Bell, O. A. Moe, Jr., and H. A. Neidig, A Summer Chemistry Workshop for Secondary School Students, J. Chem. Educ. 57, 22(1980).

DAHLBERG, DONALD B. (b. 1945) Assistant Professor, B.S. 1967, University of Washington; M.S., 1969, Ph.D., 1971, Cornell University. Physical Organic Chemistry.Proton transfer reactions, temperature effects on hydrogen isotope effects, carbon aeods.

H. F. Koch and D. B. Dahlberg, "Use of Kinetic Isotope Effects in Mechanism Studies. The Effect of an Internal Return Mechanism on the Arrhenius Behavior of Primary Hydrogen Isotope Effects". J. Am. Chem. Soc., 102, 6102(1980).

H. F. Koch, D. B. Dahlberg, M. F. McEntee, and C. J. Klecha, "Use of Kinetic Isotopes Effects in Mechanism Studies. Anamalous Arrhenius Parameters in the Study of Elimination Reactions". J. Am. Chem. Soc., 98, 1060(1976).

A. J. Kresge, D. B. Dahlberg, and A. C. Lin. "Acid Dissociation of Chloroform: Use of an Electrostatic Effect to Detect Marginal General Base Catalysis". Chem. Comm., 35,(1976).

LOCKWOOD KARL L. (b. 1929) Professor. B.S., 1951, Muhlenberg College, Ph.D., 1955, Cornell University. Organic Chemistry. Stereochemistry. Small-ring chemistry. Mechanisms of oxidation reactions.

S. J. Cristol, R. P. Evans, and K. L. Lockwood, Photochemical Reactions of Ketones with some Aliphatic Ureas, J. Org. Chem., 42, 2378(1977).

MOE,JR., OWEN A. (b. 1944) Assistant Professor. B.A., 1966, St. Olaf's College, Ph.D., 1971, Purdue University. Biochemistry Enzymology, kinetics and ligand bonding, mechanism of inorganic pyrophosphatase, metal-pyrophosphate complexes.

R. C. Bell, O. A. Moe, Jr., and H. A. Neidig, "A Summer Chemistry Workshop for Secondary School Students" J Chem, Educ., 57, 22(1980).

Owen A. MOe, Jr., Si Pham*, Tuan Dang*, and Lamar Styer*, "Kinetic Analysis of the Effect of Zinc Ion on the Inorganic Pyrophosphatase Reaction", Archives of Biochem. Biophysics. 196, 73(1979).

Owen A. Moe, Jr. and Gary Smith*, "Determination of the Molecular Weight and Subunit Stoichiometry of a Protein", J. Chem. Ed. 53, 392(1977).

Owen A. Moe, Jr. and Sally Ann Weist*, "Determination of Stability Constants for Zinc-Pyrophosphate Complexes," Analytical Biochem. 77, 73(1977).

D. N. Bailey, O. A. Moe, Jr., and J. N. Spencer, "On the Relationship Between Cell Potential and Half-Cell Reactions," J.Chem.Educ., 53, 77(1976)

NEIDIG, HOWARD A. (b. 1924) Chairman, Professor. B.S., 1943,Lebanon Valley College M.S., 1946, Ph.D., 1948,University of Delaware. General and Organic Chemistry. Chemical Education. Oxidation and Reduction of Organic Compounds. Prgram Editor, Modular Laboratory Program in Chemistry, Willard Grant Press, 1970 to present.

H. A. Neidig and J. N. Spencer, Laboratory Program to accompany Fundamentals of Chemistry by M. A. Wartell and J. D. Cummins, Willard Grant Press, 1980.

L. B. Clapp, H. A. Neidig, and J. N. Spencer, Laboratory Program to accompany General, Organic and Biochemistry by W. H. Brown and E. P. Rogers, Willard Grant Press, 1980.

R. C. Bell, O. A. Moe, Jr., and H. A. Neidig, "A Summer Chemistry Workshop for Secondary School Students", J. Chem. Ed., 57, 22(1980).

H. A. Neidig and J. N. Spencer, Introductory Laboratory Chemistry, Willard Grant Press, 1978.

LEWIS AND CLARK COLLEGE
Portland, Oregon 97219

Fall 1980 ug enrollment 1774
Degrees offered BA, BS
Telephone (503) 244-6161, x365

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5 . 2. Support staff, FTE's: Sec'y 5/6 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 9 Grad. school 2 Industry 3
Professional schools 3 Other 1 .
4. Senior majors, average past five years: 9 .
5. Undergraduates involved in research, average past five years:
Academic year 5 Summer 0
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:
Susan VanWechel, ΦKΦ National Award (1976)

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 20,000
2. Instrumentation:
NMR (Varian 360L)
UV/VIS (Varian, CARY 219)
IR (Beckman IR-10, IR-33[2])
AA (Varian 1000)
Centrifuges (Beckman L, and J-21)
Gamma Counter (Picker Autowell II)
HPLC (Dupont 820)
MCA (Nuclear Data) with GeLi detector
GC (Varian 1400, HP700, Varian 1000 prep)
Scintillation Counter (Beckman LS 100C)
3. Library resources: CA? Yes Volume indices? Yes Collected indices? No Total journal subscriptions? 25 Computer literature search service? Yes Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 10 .
Daily interlibrary courier service to Portland State University.
4. Computer facilities:
Department: OSI 8PDF micro computer (48K)
Campus: DEC VAX 11/780 time sharing system, numerous terminals both CRT and paper (10 housed in the science building)

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
Faculty Research Grants ($400 limit/fac.-from Dept.)
Faculty Research Grants ($500 limit/fac.-campus wide competition)
2. Departmental grants:
Olin Foundation ($4M Building, plus $100,000 equipment, 1979)
NSF-CAUSE $200,000 (ca. $30,000 for Chem. Dept., 1979)
Title VI $2500 (1979)
3. Faculty teaching loads: Contact hours 11-18/wk Load credit for research? None
Some load credit for directing U.G. student research (2 Student-Credits = 1 Course)
4. Sabbatical or leave support for research:
Sabbatical (eligible after seven years, average time is every 10 years): 100% salary for 1 term, 2/3 salary for 2 terms, 5/9 salary for 3 terms. Leave of absence granted one year at a time.

FACULTY PROFILE

COSAND, WESLEY L. (b. 1947) Assistant Professor. B.A., 1970, Ohio Wesleyan University, Ph.D., 1977, The Rockefeller University. *Biochemistry*. Erythrocyte membranes; peptide synthesis.

R. B. Merrifield, G. Barany, W. L. Cosand, M. Engelhard, and S. Mosjov, "Some Recent Developments in Solid Phase Peptide Synthesis", *Peptides*. Proceedings of the Fifth American Peptide Symposium, M. Goodman and J. Meienhofer (Eds.), John Wiley and Sons, Inc. (New York) 1977, pp. 488-502.

W. L. Cosand and R. B. Merrifield, "Concept of Internal Structural Controls for Evaluation of Inactive Synthetic Peptide Analogs: Synthesis of [$\text{Orn}^{13,14}$] apamin and its guanidination to an apamin derivative with full neurotoxic activity." *Proceedings of the National Academy of Science U.S.A.*, *74*, 2771 (1977).

DODSON, ARLEIGH R. (b. 1932) Professor. B.A., 1955, Kalamazoo College, M.S., 1957, Ph.D., 1961, Michigan State University. *Organic Chemistry*. Natural products; thiophenes.

DUNCAN, JAMES A. (b. 1945) Assistant Professor. B.A., 1967, Luther College, 1967-1968, University of Illinois, Ph.D., 1971, University of Oregon. *Physical Organic Chemistry*. Cycloaddition mechanisms; effects of molecular geometry on pericyclic reactions.

J. A. Duncan, *M. Bosse, and *J. M. Masnovi, "Comparative Study of Reactions of 2-Benzylisoquinolinium and 3,4-Dihydro-2-benzylisoquinolinium Salts with Carbon Disulfide in Two Base - Solvent Environments," *J. Org. Chem.*, *45*, 3176 (1980).

KEEDY, CURTIS R. (b. 1938) Associate Professor. B.A., 1960, Occidental College, Ph.D., 1965, University of Wisconsin. *Physical Chemistry*. Neutron activation analysis applied to geochemical and environmental systems.

RANDALL, WILLIAM J. (b. 1938) Associate Professor and Department Chairman. B.S., 1960, Willamette University, M.S., 1963, Ph.D., 1969, University of Illinois. *Inorganic Chemistry*. Complexes of lanthanoids; synthesis of coordination compounds; enthalpy titrations.

LOMA LINDA UNIVERSITY, La Sierra Campus
Riverside, CA. 92515

Fall 1980 ug enrollment 709
Degrees offered B.A., B.S.
Telephone (714) 785-2148

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 7.5. 2. Support staff, FTE's: Sec'y .5 Stockrm .5 Technical 0
3. 1980 seniors & their placement: Total 14 Grad. school 2 Industry 2 Professional schools 7 Other 3.
4. Senior majors, average past five years: 14.
5. Undergraduates involved in research, average past five years: Academic year 8 Summer 1
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

None.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 15,000
2. Instrumentation:

Varian EM 600 Mass Spectrometer
Varian EM 360 N.M.R.
Norelco X-Ray diffraction
Beckman Model 25 U.V.-Vis.
Alpha Sci. E.S.R.
(not including Loma Linda Campus)

Varian 200 Gas Chromatograph
Hitachi/Perkin Elmer 139 U.V.
Autoprep 700 Gas Chromatograph
Perkin Elmer 237-B I.R.
Perkin Elmer MPF-2A Fluorescence Spectrophotometer

3. Library resources: CA? no* Volume indices? no* Collected indices? yes Total journal subscriptions? 6 Computer literature search service? yes Separate chemistry or science library? no Librarian? no Standing orders for review series and annual reviews (past five years) 4. *Students have access to C.A. & extensive library holding on Loma Linda campus, 20 mi. by reg. bus serv.
4. Computer facilities:

DEC PDP 11/40 RSTS/E Hard copy & CRT in Bldg.; MINI - 11; AIM 65

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

As part of regular budget. Not separated.

2. Departmental grants:

none

3. Faculty teaching loads: Contact hours 15 Load credit for research? --
4. Sabbatical or leave support for research:

Approximately one summer each 2-3 years
One faculty has ½ time research chair.

FACULTY PROFILE

ALLEN, WILLIAM M. (b. 1939) Professor. B.A., 1961 La Sierra College (LLU) Ph.D., 1967, University of Maryland. Organic Chemistry. Organic Synthesis, Hydride Reduction Reactions, Grignard Analogs.

GALAWAY, RONALD A. (b. 1943) Assistant Professor. B.S., 1966 Pacific Union College, Ph.D., 1975, University of California, Riverside. Organic Chemistry. Mechanisms of enzyme catalyzed reactions.

M.J. Gibian and R.A. Galaway, Steady State Kinetics of Lipoxygenase Oxygenation of Unsaturated Fatty Acids, Biochemistry, 15, 4209 (1976).

M.J. Gibian and R.A. Galaway, Chemical Aspects of Lipoxygenase Reactions, in Bioorganic Chemistry, E.E. van Tamelen, Ed., Vol. I, Academic Press, NY 1976.

HOLMES, IVAN G. (b. 1935) Professor. B.S., 1957 Arizona State University, Ph.D., 1969, Oregon State University. Analytical Chemistry. X-ray diffraction studies of fossil soils.

$6,000 Grant, Geoscience Research Institue.

JENKS, RODNEY L. (b 1945) Assistant Professor. B.S. 1967 Pacific Union College, M.S. 1970, University of Arizona. Bioorganic Chemistry.

R.L. Jenks, T. Astrup, Euglobulin in Several Species and the Effects of Some Synthetic Agents, Progress in Chemical Fibrinolysis and Thrombolysis, Vol. 3, Chapter 7 (1977).

C. Kluft, R. Jenks, T. Astrup, Production of Plasminogen Activator Activity in Factor XII-deficient Plasma, Thrombosis Research 10, 759-764 (1977)

R.L. Jenks, T. Astrup, Effects of Dextran Sulphate and Flufenamic Acid on Euglobulin Fibrinolytic Activity of Glass-Treated or Heated Plasma, Haemotasis 9: 248-256 (1980)

RICHARDSON, DAVID (b. 1943) Professor. B.A., 1961, Oakwood College, M.S., 1967, Purdue University, Ph.D., 1973, Utah State University. Physical Organic Chemistry. Nuclear Magnetic Resonance Spectrometry Studies of Alcoholic Metal Soluation.

SHELDEN, H. RAYMOND II (b. 1942) Professor and Chairman. B.A., 1964, Loma Linda University, Ph.D., 1969, University of California, Irvine. Organic Chemistry. Mechanisms, structure determination.

H.W. Moore, H. Raymond Shelden II, et. al, Diels Alder Reactions of 1,4-quinone monobenzensulfonamides, J. Organic Chemistry. in press.

H. Raymond Shelden II, Individualized Instruction in Introductory Chemistry, J. of Chemistry Education. 55, 379 (1978)

TATUM, G. ROGER (b. 1947) Associate Professor. B.A., 1970 Columbia Union College, Ph.D., 1979, University of Maryland, College Park. Chemical Education. Microprocessor-controlled instrumentation; secondary and post-secondary chemistry curricula; chemical instrumentation.

TATUM, G. ROGER, cont'd

D. Eby and R. Tatum, The Chemistry of Food Additives, Seattle, Unigraph Publishers, (1977)

D. Eby and R. Tatum, The Chemistry of Over-the Counter Drugs, Seattle. Unigraph Publishers, (1977)

D. Eby and R. Tatum, The Chemistry of Petroleum, Seattle, Unigraph Publishers, (1977)

D. Eby and R. Tatum, The Chemistry of Soap, Detergents, and Cosmetics, Seattle, Unigraph Publishers, (1977)

WILSON, LELAND Y. (b. 1934) Professor, B.S. 1956 Walla College, M.S., 1960, University of Nebraska, Ph.D., 1964, University of Nebraska. Physical Chemistry.

MACALESTER COLLEGE

St. Paul, MN 55105

Fall 1980 ug enrollment 1635

Degrees offered B.A.

Telephone (612)-647-6271

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: $5\frac{1}{2}$. 2. Support staff, FTE's: Sec'y 1/4 Stockrm 1 Technical ____
3. 1980 seniors & their placement: Total 18 Grad. school 6 Industry 3 Professional schools 4 Other 5.
4. Senior majors, average past five years: 17.
5. Undergraduates involved in research, average past five years:
   Academic year 7 Summer 8
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:
   NSF Graduate Fellowships (4): Kerin Scanlon (1979), Steven S. Kantner (1977), Susan C. Lester (1977), Patricia Thiel (1976)

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 14,000
2. Instrumentation:

   NMR - 60MHz(JEOL C-60HL)
   MS (Varian EM600)
   UV-Vis (Beckman 25 & DK2A)
   AA (Beckman)
   GC (Beckman 45)
   IR (Beckman 5A)

3. Library resources: CA? * Volume indices? * Collected indices? * Total journal subscriptions? 18 Computer literature search service? No Separate chemistry or science library? Yes Librarian? 1/2 Standing orders for review series and annual reviews (past five years) 15.
   *Chem. Abstracts is complete through 1976 - was discontinued in 1977.
4. Computer facilities: (Campus)
   3 MINC minicomputors with instrument interfacing capabilities.
   PDP 11/70; 15 terminals distributed in various science labs and classrooms.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: $3000 (supplies, travel, equipment, etc.).
   $3000 (endowment income for student stipends).
2. Departmental grants:
   NSF CAUSE: share of $300,000 grant; NEH: share of $300,000 grant
3. Faculty teaching loads: Contact hours 12 Load credit for research? none.
4. Sabbatical or leave support for research:
   Faculty can apply for sabbatical leave at 50% salary for full year or full salary for 1/2 year. Various faculty development programs funded by the Mellon Foundation, NSF, etc., also provide leave support for research.

FACULTY PROFILE

CARLSON, JANET L. (b. 1952) Assistant Professor. B.A., 1974, Hamline University, Ph.D., 1978, Stanford University. Organic Chemistry. Organic synthesis (natural products and synthetic methods), design and synthesis of enzyme inhibitors.

W. S. Johnson, L. R. Hughes, J. L. Carlson, "Biomimetic Polyene Cyclizations. How the Phenylacetylenic Compares with the Styryl Terminator in Influencing the Stereoselectivity of the Process," J. Amer. Chem. Soc., 101, 1281(1979).

C. Stein, S. Bouma, J. Carlson, C. Cornelius, J. Maeda, C. Weschler, E. Deutsch and K. O. Hodgson," Structural Characterization and Resulting Implications for the Mechanism of Formation of Bis(2-mercaptoethylamine)ethylenediaminechromium (III) Perchlorate, $[(en)Cr(SCH_2NH_2)_2]ClO_4$," Inorganic Chemistry, 15, 1183(1976).

PARSON, KATHLEEN A., (b.1945) Assistant Professor. B.A., 1967, Macalester College, Ph.D., 1974, University of Minnesota. Biochemistry. Membrane-DNA associations in virus-infected bacteria; neurochemistry.

D.P. Snustad, C.J.H. Bursch, K.A. Parson and S.H. Hefeneider," Mutants of Bacteriophage T4 Deficient in the Ability to Induce Nuclear Disruption: Shutoff of Host DNA and Protein Synthesis, Gene Dosage Experiments, Identification of a Restrictive Host, and Possible Biological Significance," J. Virology, 18, 268(1976).

D.P. Snustad, M.A. Tigges, K.A. Parson, C.J.H. Bursch, F.M. Caron, J.F. Koerner and D.J. Tutas," Identification and Preliminary Characterization of a Mutant Defective in the Bacteriophage T4-Induced Unfolding of the Escherichia coli Nucleoid," J. Virology, 17, 622(1976).

SCHWARTZ, A. TRUMAN (b. 1934) Professor and Chairman. A.B., 1956, University of South Dakota, B.A., 1958, Oxford University, M.A., 1960, Oxford University, Ph.D., 1963, Massachusetts Institute of Technology. Physical Chemistry. Physical chemistry of proteins, history of chemistry.

A. Truman Schwartz, "Admitting Ambiguity," J. Chem. Educ. 57, in press, (1980).

A. Truman Schwartz, "Chemistry: One of the Liberal Arts," J. Chem. Educ., 57, 13(1980).

J. F. Brandts, L. Erickson, K. Lysko, A.T. Schwartz, and R.D. Taverna, "Calorimetric Studies of the Structural Transition of the Human Erythrocyte Membrane: The Involvement of Spectrin in the A Transition," Biochemistry, 16, 3450(1977).

A. Truman Schwartz, "The History of Chemistry: Education for Revolution," J. Chem. Educ., 54, 467(1977).

A. Truman Schwartz and George B. Kauffman, "Experiments in Alchemy," Part I J. Chem. Educ., 53, 136(1976); Part II, J. Chem. Educ., 53, 235(1976).

SLOWINSKI, EMIL J. (b.1922) Professor. B.S., 1946, Massachusetts State College, Ph.D., 1949, Massachusetts Institute of Technology. Physical Chemistry. Quantum mechanics of simple systems.

W.L. Masterton, E.J. Slowinski and C.L. Stanitski, Chemical Principles, 5th edition, W.B. Saunders Company, 1980.

SLOWINSKI, E.J., cont'd

E.J. Slowinski, W.C. Wolsey, and W.L. Masterton, Chemical Principles in the Laboratory, 3rd edition, W.B. Saunders Company, 1980

W.L. Masterton, E.J. Slowinski, and E.T. Walford, Chemistry, Holt, Rinehart and Winston, 1980

W.L. Masterton, E.J. Slowinski and E.T. Walford, Chemistry in the Lab, Holt, Rinehart and Winston, 1980.

STOCKER, FRED B. (b. 1931) Professor. B.S., 1953, Hamline University, M.S., 1955, University of Minnesota, Ph.D., 1958, University of Colorado. Organic Chemistry. Heterocyclic chemistry, especially of imidazoles and pyrimidines.

WOLSEY, WAYNE C. (b. 1936) Professor. B.A., 1958, Michigan State University, Ph.D., 1962, University of Kansas. Inorganic Chemistry. Complexes and other compounds of transition elements.

W. Wolsey, "Faculty Development Programs at a Liberal Arts College - A Personal Perspective," J. Chem. Educ., 57, (in press), (1980).

J.M. Bassett, G.K. Barker, M. Green, J.A.K. Howard, F.G.A. Stone, and W.C.Wolsey, "Chemistry of Low-Valent Metal Isocyanide Complexes, Part 3. The Synthesis, Structure and Dynamic Behavior of Nonakis(ethyl and isopropyl isocyanide)di-iron and -ruthenium complexes; crystal structure of $Fe_2(\mu\text{-CNEt})_3(CNEt)_6$," J. Chem. Soc. - Dalton Trans., 1980, in press.

G.K. Barker, M. Green, F.G.A. Stone, A.J. Welch, and W.C. Wolsey, "The Synthesis and Molecular Structure of $9\text{-H-}9,9,\text{-}(Et_3P)_2\text{-}\mu_{10,11}\text{-H-}7,8,9\text{-}C_2PtB_2H_{10}$ and $9\text{-H-}9,10\text{-}(Et_3P)_2\text{-}7,8,9\text{-}C_2B_8H_9$; Pt(9)→B(10) migration of a Triethylphosphine Ligand and Evidence for the Redox Sequence Pt(0) → Pt(IV) → Pt(II)," J. Chem. Soc. - Chem. Comm., 1980, 627.

W.C. Wolsey, "Variation of Radioactive Decay Rates," J. Chem. Educ., 55, 302(1978).

E.J. Slowinski, W.L. Masterton, and W.C. Wolsey, Chemical Principles in the Laboratory, W. B. Saunders Co., Philadelphia, 1977.

MANHATTAN COLLEGE and
COLLEGE OF MT. ST. VINCENT ON HUDSON
Riverdale, NY 10471
(Joint Department)

Fall 1980 ug enrollment 4076
Degrees offered B.S., B.A., Chem. B.S. Biochem.
Telephone (212) 920-0206

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 17*. 2. Support staff, FTE's: Sec'y 1 Stockrm 2 Technical 0
3. 1980 seniors & their placement: Total 25 Grad. school 4 Industry 10 Professional schools 9 Other 2.
4. Senior majors, average past five years: 25.
5. Undergraduates involved in research, average past five years:
   Academic year 11 Summer 11.4
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:
   M. Bradicich, NSF Graduate Fellowship, 1977.

*Including FTE of laboratory assistants

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 18,000
2. Instrumentation:
   NMR: Varian T-60
   IR: P-E 621, P-E 337, P-E 137
   MS: Varian EM 600
   UV-VIS: Cary 14, Beckman DB(2), Beckman DU(2)
   X-ray: GE XRD 5
   AA: P-E 290
   MultiChannel Analyzer: Nucleus Model 1024D
   Fluorescence Spectrophotometer: P-D 204A
   Polarograph: PAR Model 364
   Ultracentrifuge: Beckman Spinco
3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 51 Computer literature search service? No Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 20.
4. Computer facilities:
   Campus: Two DEC PDP 11/70; a remote terminal provides access to a CDC 6600.
   Chemistry Department Microcomputer: DEC LSI 11/2 w/interface board ASR-33.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   Individual Summer Grants of $1500 awarded to faculty. Some support for supplies.
2. Departmental grants: NSF-CAUSE: $64,370, 6/79-6/82. NSF-LOCI: $23,700, 9/78-9/81. NSF_ISEP: $6,100, 9/78-9/81. NSF-URP: $9,850, Summer 1980. DuPont College Science Grant: $7,000, January 1980. National Starch Corp.: $1,000, 1980.
3. Faculty teaching loads: Contact hours 13 Load credit for research? Yes
4. Sabbatical or leave support for research: Faculty eligible for sabbatical leave after ten years & thereafter every six years. Provide 50% salary full year or full salary 1/2 year.

MANHATTAN COLLEGE and
COLLEGE OF MT. ST. VINCENT

FACULTY PROFILE

BADDING, VICTOR G. (b. 1935) Associate Professor. B.S., 1957, Canisius College, Ph.D., 1961, University of Notre Dame. Organic Chemistry. Grignard Reactions of Acetals and Ketals, Stereochemistry of Inclusion Compounds.

V.G. Badding and L. Durney, A Kinetic Method for Analysis of Cyanide Ion in Electroplating Effluents, Plating and Surface Finishing, 67 (8), 49 (1980).

J. Wasacz and V.G. Badding, A Hydration of An Alkyne Illustrating Steam and Vacuum Distillation, J. Chem. Ed. (accepted for publication).

BARILE, RAYMOND C. (b. 1936) Associate Professor. B.S., 1958, Manhattan College, M.S., 1960, Fordham University, Ph.D., 1965, Fordham University. Physical Chemistry. Kinetics and mechanism of substitution and electron transfer reactions involving transition metal analogs of biochemical systems. Development of an integrated sequence of experiments utilizing the microprocessor for a unified laboratory program.

L.P. Michiels, R.C. Barile, G.F. De La Fuente*, Two Safety Improvements to a Standard Experiment on the Boiling Point-Composition Diagram of a Binary System, J. Chem. Ed. (accepted for publication).

CASO, MARGUERITE M. (b. 1919) Associate Professor. A.B., 1940, College of Mount Saint Vincent, M.S., 1955, Ph.D., 1958, Fordham University. Analytical-Inorganic Chemistry. Instrumental methods of analysis, studies in nonaqueous media, investagations of trace metals and carcinogens in food-stuffs. Studies in thermal analysis and differential scanning calorimetry.

CHAROLA, A. ELENA (b. 1942) Assistant Professor. Licenciado en Quimica, 1967 (Analitica), 1969 (Industrial), Doctor en Quimica, 1974, Universidad Nac. La Plata, Argentina. Physical/Analytical Chemistry. Chemistry of the solid state, polymorphism, X-ray diffraction, scanning electron microscopy, electroanalytical chemistry.

Seven publications in last five years.

S.Z. Lewin and A.E. Charola, Aspects of Crystal Growth and Recrystallization Mechanisms as Revealed by Scanning Electron Microscopy, Scanning Electron Microscopy/1980/I 551 (1980).

S.Z. Lewin and A.E. Charola, X-Ray Powder Diffraction Investigation of the Monumental Stone of the Castel dell'Ova, Naples, Italy, Advances in X-Ray Analysis, 22, 169-80, Plenum Press, NY, 1979 .

S.Z. Lewin and A.E. Charola, The Physical Chemistry of Deteriorated Brick and its Impregnation Technique, Proceedings of the Conference "Il Mattone di Venzia" pp. 189-214, Fondazione Cini, 22-23 October 1979 Venice.

S.Z. Lewin and A.E. Charola, Efflorescences on Building Stones--SEM in the Characterization and Elucidation of the Mechanism of Formation, Scanning Electron Microscopy SEM/1979/I 379 (1979).

S.Z. Lewin and A.E. Charola, Scanning Electron Microscopy in the Diagnosis of 'Diseased' Stone, Scanning Electron Microscopy, 1, 695 (1978).

KIRCHNER, RICHARD M. (b. 1941) Associate Professor and Chairman. A.B., 1964, University of California at Berkeley, M.S., 1966, California State University at San Jose, Ph.D., 1971, University of Washington(Seattle). Inorganic and Structural Chemistry. Synthesis and characterization of coordination compounds, organo-

KIRCHNER, RICHARD M. (cont'd)

metallic compounds, and transition metal cluster compounds. X-ray crystallography. Isolation and characterization of sesquiterpenoid stress metabolites related to potato hypersensitivity.

A. Müller, S. Pohl, M. Dartmann, J.P. Cohen, J.M. Bennett and R.M. Kirchner, Crystal Structure of $(NH_4)_2[Mo_3S(S_2)_6]$ Containing the Novel Isolated Cluster $[Mo_3S_{13}]^{2-}$, *Z. Naturforsch.*, *34b*, 434-436 (1979).

E.M. Flanigen, J.M. Bennett, R.W. Grose, J.P. Cohen, R.L. Patton, R.M. Kirchner, and J.V. Smith, Silicalite, A New, Hydrophobic, Crystalline Silica Molecular Sieve, *Nature*, *271*, 512-516 (1978).

R.M. Kirchner, R.G. Little, K.D. Tau, and D.W. Meek, The Crystal and Molecular Structure of the Dimethylplatinum(II) Complex of 1,1,1-Tris(diphenylphosphinomethyl) ethane, *J. Organometal. Chem.*, *149*, C15-C18 (1978).

Grants: ACS-PRF Type B, 9/1/77 to 8/31/81, $11,000.
Sigma Xi Grant-in-Aid of Research, 1/22/80, $400.

KRONSTEIN, MAX (b. 1895) Research Associate. Ph.D., 1922, University of Leipzig (Germany). *Organic Chemistry*. Polymer chemistry, organometallic reaction coatings.

Seven publications 1976-80.

M. Kronstein, Metal Oxides as Reactive Components, *Modern Paint and Coatings*, Vol. 70, No. 9, p. 46-50 (September, 1980).

M. Kronstein, The Role of Polymeric Complexes in Phosphatizing Treatments, SAE Technical Paper Series 800444, the Society of Automotive Engineers, Inc. Warrendale, PA., 15096. (February, 1980).

M. Kronstein, Release Matter from Antifouling Paints, *Modern Paint and Coatings*, Vol. 68, No. 9, p. 36-46 (September, 1978).

M. Kronstein, Lecithin Modified Pigmentations, *Modern Paint and Coatings*, Vol.68 No. 2 (February, 1978).

M. Kronstein, New Analysis of Organolead Toxicant Release, (Atomic Absorption Analysis), *Modern Paint and Coatings*, Vol. 67, No. 8, p 57-61 (August, 1977).

Current Research Funding:

Lecithin Research, sponsored by American Lecithin Company, Atlanta, GA. January 1 to December 31, 1980, $7200.

Automotive Paint Systems over Galvanized Steel, sponsored by International Lead Zinc Research Organization, Inc., New York, NY. January 1 to December 31, 1980, $25,000.

Water-Based Antifouling Paints for Naval Applications, sponsored by U.S.Navy, David W. Taylor Naval Ship Research and Development Center, Annapolis, MD. September 1, 1980 to February 28, 1981, $5000.

MAHONY, JOHN D. (b. 1931) Associate Professor. B.S., 1951, St. John's University, M.S., 1953, University of Connecticut, Ph.D., 1965, University of California at Berkeley. *Nuclear and Radiochemistry*. Nuclear reactions and nuclear fission. Radiochemical tracer studies for environmental applications.

R.J. Spinna, W.P. Saukin, J.D. Mahony, The Effect of Electroplating Wastewater Sludge as an Admixture on the Physical Properties of Concrete-Phase II, Proceedings of 67th Technical Conference of the American Electroplaters' Society, Milwaukee, Wisconsin (1980).

J.D. Mahony, E.A. Dwyer*, W.P. Saukin, and R.J. Spinna, Radiochemical Studies of the Leaching of Metal Ions from Sludge Bearing Concrete, Proceedings of EPA/AES Third Conference on Advanced Pollution Control, Orlando, Florida (1980).

R.J. Spinna, W.P. Saukin, J.D. Mahony, and A.E. Charola, The Effect of Electroplating Wastewater Sludge as an Admixture on the Physical Properties of Concrete-Phase I, Proceedings of the 66th Technical Conference of the American Electroplaters' Society, Atlanta, Georgia (1979).

MICHIELS, (Brother) LEO P. (b. 1928) Assistant Professor. A.B., 1953, Manhattan College, M.A., 1959, Manhattan College, M.S., 1964, University of Detroit, Ph.D., 1968, University of Detroit. *Physical/Inorganic Chemistry*. Synthesis and characterization of binuclear cyanoferrates, and transition metal cluster compounds with disulfides. Development of integrated sequence of experiments utilizing the microprocessor for a unified laboratory program.

L.P. Michiels, R.C. Barile, G.F. De La Fuente*, Two Safety Improvements to a Standard Experiment on the Boiling Point-Composition Diagram of a Binary System, *J. Chem. Ed.* (accepted for publication).

MILLER, HERBERT K. (b. 1921) Professor. B.S., 1940, College of City of New York, M.S., 1947, University of Illinois, Ph.D., Columbia University. *Biochemistry*. Purine Metabolism; methylation of macromolecules.

H.K. Miller and M.E. Balis, Studies on the Mechanism of Inhibition of tRNA Methylation by 3.4-dihydroxyphenylalanine, *Biochim. Biophys. Acta*, *474*, 435 (1977).

M.L. Moller, H.K. Miller and M.E. Balis, Effects of Amines on Macromolecular Methylation, *Biochim. Biophys. Acta*, *475*, 425 (1977).

NEWMAN, PAUL (b. 1924) Associate Professor. B.S., 1945, City College of New York, M.A., 1952, Brooklyn College, Ph.D., 1962, New York University. *Organic Chemistry*. Development of new methods for the optical resolution of chemical compounds, structural and mechanistic stereochemistry.

Book: Optical Resolution Procedures for Chemical Compounds. Volume 1-Amines and Related Compounds (1978).

SAAR, ROBERT A. (b. 1951) Assistant Professor. B.A., 1973, Yale University, Ph.D., 1980, University of New Hampshire. *Environmental Chemistry*. Complexation of metal ions by natural organic matter; transport of toxic metal ions in the environment; metal ion-ligand stability constant calculations.

R.A. Saar and J.H. Weber, Comparison of spectrofluorometry and ion-selective electrode potentiometry for determination of complexes between fulvic acid and heavy metal ions, *Anal. Chem.*, in press.

R.A. Saar and J.H. Weber, Lead(II)-fulvic acid complexes: conditional stability constants, solubility, and implications for lead(II) mobility, *Environ. Sci. Technol.*, *14*, 887-880 (1980).

R.A. Saar and J.H. Weber, Lead(II) complexation by fulvic acid: How it differs from copper(II)- and cadmium(II)-fulvate complexation, *Geochim. Cosmochim. Acta*, *44*, 1381-1384 (1980).

R.A. Saar and J.H. Weber, Complexation of cadmium(II) with water- and soil-derived fulvic acids: effect of pH and fulvic acid concentration, *Can. J. Chem.*, *57*, 1263-1268 (1979).

R.A. Saar and F.L. Pilar, *A Study Guide to Accompany Chemistry, The Universal Science*, 310 pages. Addison-Wesley, Reading, Massachusetts, 1979.

SEARLES, ARTHUR LANGLEY (b. 1920) Professor. B.A., 1942, Ph.D., 1946, New York University. *Organic Chemistry*. Nitrogen heterocycles; beta-ketoamides; cyclizations.

VICTOR, JACOB (b. 1951) Assistant Professor. B.S., 1973, City College of New York, Ph.D., 1978, City University of New York. Biochemistry. Enzymology, anticancer metabolites and pyrimidine biosynthesis, biological application of High Performance Liquid Chromatography (HPLC).

J. Victor, L.B. Greenberg and D.L. Sloan, Kinetic Studies of Orotate Phosphoribosyltransferase from Baker's Yeast. J. Biol. Chem., 254, 2647 (1979).

J. Victor, A. Leo-Mensah and D.L. Sloan. Divalent Metal-Ion-Activation of the Yeast Orotate Phosphoribosyltransferase Catalyzed Reaction. Biochemistry, 18, 3597 (1979).

WASACZ, JOHN P. (b. 1944) Associate Professor. B.S., 1965, St. John's University (N.Y.), Ph.D., 1969, University of Pennsylvania. Organic Chemistry. Synthesis of methadone analogues, small heterocyclic rings, heterocyclic photochemistry.

J. Wasacz and V.G. Badding, A Hydration of an Alkyne Illustrating Steam and Vacuum Distillation, J. Chem. Ed. (accepted for publication).

J.P. Wasacz, M.M. Joullie, U. Mende, I. Fuss, and G.W. Griffin, Photochemistry of 2,2,4,4-tetraphenyloxetan-3-one. Intermediates in the Photofragmentation of Aryl Substituted Oxirans, J. Org. Chem., 41, 572 (1976).

MARIETTA COLLEGE
Marietta, Ohio 45750

Fall 1980 ug enrollment 1285
Degrees offered B.S. and B.A.
Telephone (614)373-4643

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5.5. 2. Support staff, FTE's: Sec'y 3/4 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 6 Grad. school 1 Industry 4 Professional schools 1 Other 0 .
4. Senior majors, average past five years: 8 .
5. Undergraduates involved in research, average past five years: Academic year 6 Summer 0
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

none

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 25,000
2. Instrumentation:

NMR (Varian T-60) & Signal Averager (Varian V-2048)
MS (Varian EM-600)
UV-Vis (Beckman DU-2 and DB)
AA (Southern Analytical A 3000)
Liquid Scintillation (Packard 2009)
GC (Bendix 2100)
GC (Gow-Mac 550P)
IR (Beckman AccuLab 10)
IR (Perkin Elmer 710B)
Electroscan-30 (Beckman)

3. Library resources: CA? Yes Volume indices? Yes Collected indices? No Total journal subscriptions? 28 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 22 .

4. Computer facilities: Campus: Interdata 832D computer, 31 interactive CRT terminals and 7 graphics printers.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
Approx. $1,500/yr. chemicals and glassware; $2500-4000/yr. for equipment

2. Departmental grants:
American Cyanamid Faculty Support Grant $2750
Lubrizol $500
Spectroscopy Society of Pittsburgh $2300
3. Faculty teaching loads: Contact hours 12 Load credit for research? No .

4. Sabbatical or leave support for research: Faculty can apply for sabbatical leave at 50% salary full year, full salary for ½ year. Faculty can apply every 7th year.

FACULTY PROFILE

GILDE, HANS-G. (b. 1933) Professor. B.S., 1957, Albright College, Ph.D., 1961, Ohio University. Organic Chemistry. Electro-organic chemistry, organic synthesis, and applied spectroscopy.

*D. Heldman and H.-G. Gilde, "Use of a Lanthanide NMR Shift Reagent in the Analysis of the Trans-Retinol Spectrum", J.Chem. Educ., 57, 390 (1980).

R. Huisgen and H.-G. Gilde, Translator, "Rudolph Criegee", J. Chem. Educ., 56, 369 (1979).

P. Rademacher and H.-G. Gilde, Translator, "Chemical Carcinogens", J. Chem. Educ., 53, 757 (1976).

GROSE, HERSCHEL G. (b. 1921) Professor. B.S., 1942, Indiana Central College, Ph.D., 1951, Indiana University. Organic Chemistry. Organic synthesis and polymer chemistry.

HOHMAN, WILLIAM H. (b.1939) Professor and Chairman. B.S., 1961, Mount Union College, Ph.D., 1966, Ohio University. Inorganic Chemistry. Synthesis and photochemistry of transition metal coordination compounds; biologically significant metal complexes.

KNECHT, LAURANCE A. (b. 1932) Professor. B.S., 1953, University of Illinois, Ph.D., 1959, University of Minnesota. Analytical Chemistry. Trace metal analysis, electroanalytical methods, and analysis of environmental materials.

L. A. Knecht, "An Inexpensive Push-Button Flow-Limited Distilled Water Faucet", J. Chem. Educ., 55, 658 (1978).

WALKER, ROBERT G. (b. 1944) Assistant Professor. B.A., 1966, Hiram College, Ph.D., 1972, Purdue University. Biochemistry. Level and functions of gangliosides in developing chick embryo.

MIDDLEBURY COLLEGE
Middlebury, VT 05753

Fall 1980 ug enrollment 1904
Degrees offered AB MS
Telephone (802)388-7954

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 6. 2. Support staff, FTE's: Sec'y 3/4 Stockrm 3/4 Technical 3/4
3. 1980 seniors & their placement: Total 9 Grad. school 3 Industry 2 Professional schools 2 Other 2.
4. Senior majors, average past five years: 12.
5. Undergraduates involved in research, average past five years:
   Academic year 4 Summer 4
6. Master's program? Yes Master's degrees conferred, average past five years: 0
7. National honors, undergraduate or senior majors, past five years:
   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 29,000
2. Instrumentation:

NMR 60MHZ (Hitachi Perkin-Elmer R-20)	GC HP5750 Prep. Attach.
IR P.E. 457, P.E. 727 (2), P.E. 137	Refrig. Cent. RC-5B
VV-VIS Cary 15	Ultra Cent. Beckman L2-65
x-Ray diffraction-fluor (G.E. XRD6)	Mass Spec. (JOELJMS07)
UV-VIS W. auto. cuv. (Gilford 250)	
AA (P.E. 103)	

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 44 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? Yes Standing orders for review series and annual reviews (past five years) 51.
4. Computer facilities: College: PDP-11/70 RSTS/E Operating Systems; 25 Terminals - 10 in the Science Center. PDP-11-V03; 32 Channel A to D Converter.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Approximately $7,000 per year for capital equipment and supplies. One faculty research grant $1,970.00
2. Departmental grants: duPont $10,000
3. Faculty teaching loads: Contact hours 10 Load credit for research? No
4. Sabbatical or leave support for research: Faculty may apply for leave of absence for fall and winter terms or winter and spring terms with full pay or full-year leave at 5/9 salary. Frequency is variable. Average is about once in eight years.

FACULTY PROFILE

BENNETT, DAVID A. (b. 1942) Assistant Professor. A.B., 1964, Muskingum College; M.A.T., 1965 Northwestern University; Ph.D., 1973, Cornell University. *Bioinorganic Chemistry*. Biochemical studies and bioinorganic models of metalloenzymes. On leave 1979-1981.

> J.A. Symanski* and D.A. Bennett, Single-Wavelength Spectrophotometric Assay for Tryptophan Oxygenase, *Analytical Biochemistry*, **79**, 419 (1977).

GLEASON, ROBERT W. (b. 1932) Professor and Chairman. B.A., 1954, M.S. 1956, Middlebury College; Ph.D., 1960, Massachusetts Institute of Technology. *Organic Chemistry*. Lithium Aluminum Hydride Reductions of N-nitrosodibenzylamines and oxidations of dibenzylhydrazines.

> *NMR Spectroscopy-An Introduction* by Harald Günther, translated from the German by R.W. Gleason, John Wiley and Sons, Ltd., Chichester, 1980.

HARNEST, GRANT H. (b. 1916) Professor. A.B., 1939, Knox College; M.S., 1941, Middlebury College; Ph.D., 1946, University of Virginia. *Organic Chemistry*. Synthetic analgesics, heterocyclic amino alcohols.

POOL, EDWIN L. (b. 1921) Professor. B.S., 1943, M.S., 1949, Ph.D., 1952, Iowa State University. *Analytical Chemistry*. Trace analysis of metal ions; environmental analysis.

REINGOLD, I. David (b. 1949) Assistant Professor. A.B., 1971, Dartmouth College; Ph.D., 1976, University of Oregon. *Synthetic Organic Chemistry*. Synthesis of theoretically interesting compounds.

> E. Garfunkel* and I.D. Reingold, A New, Simple Synthesis of Tropone, *J. Org. Chem.*, **44**, 3725 (1979).
>
> J.C. Vederas, I.D. Reingold and H.W. Sellers, Stereospecificity of Sodium Borohydride Reduction of Tyrosine Decarboxylase from Streptococcus *faecalis*, *J. Biol. Chem.*, **254** (1979).
>
> I.D. Reingold, W. Schmidt and V. Boekelheide, *J. Am. Chem. Soc.*, Synthesis, Properties, and Photoelectron Spectra of Substituted and Layered[2.2](2,6)Pyridinoparacyclophanes, *J. Am. Chem. Soc.*, **101**, 2121 (1979).
>
> Grants: Petroleum Research Fund, $13,000, Synthesis of Longicycloaromatic Compounds, 1979-1981. National Science Foundation Important Notice 69A, $18,000, Acquisition of a Mass Spectrometer, 1980-1981. Research Corporation Cottrell College Science Grant, $4,050.00, Planar Tetraccordinate Carbon; 1980-1981.

ROBERTS, E. KIRK (b. 1922) Professor. B.A., 1949, Earlham College, Ph.D., 1953, Harvard University. Physical Chemistry. Properties of complexes of transition metal ions with polyfunctional chelating ligands.

Elementary Physical Chemistry to be published by Allyn and Bacon, 1980.

O'BRIEN, J. MARGARET (b. 1953) Visiting Assistant Professor. A.B., 1975, Vassar College; Ph.D. University of Delaware 1981. Biochemistry. Studies on Steroid Hormone Receptors.

J.M. O'Brien, J.W. Thanassi and J.A. Cidlowski, Biochem. and Biophys. Res. Comm., **92**, 155 (1980).

MOUNT HOLYOKE COLLEGE
South Hadley, MA 01075

Fall 1980 ug enrollment 1,947
Degrees offered BA, MA
Telephone 413-538-2214

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 9 . 2. Support staff, FTE's: Sec'y 1.5 Stockrm 1 Technical 2
3. 1980 seniors & their placement: Total 28 Grad. school 6 Industry 6 Professional schools 4 Other Unknown 12 .
4. Senior majors, average past five years: 38 .
5. Undergraduates involved in research, average past five years:
   Academic year 18 Summer 11
6. Master's program? yes Master's degrees conferred, average past five years: 1 /yr.
7. National honors, undergraduate or senior majors, past five years:

   1 NSF Fellowship - 1978, Kathy Brighty

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 60,000
2. Instrumentation:

   NMR - JEOL FX-90Q, T-60, home built pulse
   Fluorescence - Aminco Bowman, PE MPF 44B
   IR-PE 298, 457, 137
   UV, VIS-PE Lambda 3, Cary 17, Zeiss PM Q2 and PM6, Gilford 252, PE 350, 202
   AA-PE2380
   Laser - Lexel 4W Argon Ion Laser, Coherent Tunable Dye 599.
   Centrifuge - Sorval RC5-B
   ESR - Varian E-4
   Stopped Flow - Dionex
   Scintillation Counters - Beckman LS100C, Nuclear Chicago 6850

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 53 Computer literature search service? No Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 29/yr. .

4. Computer facilities: In Chemistry Building: Two IBM keypunches, card reader, & line printer which constitue remote batch facility on line to CDC Cyber 175 ,UMass, six CRT and two DEC writers, Tectronix 4051 graphics terminal and 4662 plotter, Diable printer.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Faculty grants (see individual faculty members), $10,000 for each new faculty member, room renovations.

2. Departmental grants: DuPont - $7,000, Shell - $1,500, Cyanamid - $3,000, Private bequests - $24,000

3. Faculty teaching loads: Contact hours 12 Load credit for research? No .

4. Sabbatical or leave support for research: One-half pay for one semester after three years. Normally one-half academic year salary each seventh year.

FACULTY PROFILE

CAMPBELL, MARY K. (b. 1939) Associate Professor. B.A., 1960, Rosemont College, Ph.D., 1966, Indiana University. *Physical Biochemistry*. Nucleic acid recognition by proteins--UV and fluorescence spectroscopy.

M. K. Campbell, "The $^1A_{1g} \rightarrow {^1B_{2u}}$ Transition of Benzene, a Physical Chemistry Experiment," *J. Chem. Educ.*, *57*, 756 (1980).

M. K. Campbell, *S. Shipp, and *E. Jantzen, "Location of Chromophoric Residues in Ribonuclease T_1 by Solvent Perturbation Ultraviolet Difference Spectroscopy," *Biochem. Biophys. Res. Commun.*, *72*, 1014 (1976).

Grants Active: $6,500/yr. PRF "Protein-Nucleic Acid Recognition." $1,000 Faculty Grant "Protein-Nucleic Acid Recognition." $20,900 NSF 69A "Purchase of Spectrofluorimeter."

DOBOSH, PAUL A. (b. 1943) Associate Professor. B.S., 1965, Carnegie-Mellon University, M.S., 1967, Ph.D., 1969. *Theoretical Chemistry*. Semi-empirical MO theory-calculations of conformations of organometallics.

E. Shustorovich and P. A. Dobosh, "Perturbation Theory and Spin Coupling Constants in Substituted Compounds. II. Main Group Tetrahedral and Planar Trigonal Fluorides," *J. Mag. Res.*, *39*, 79 (1980).

P. A. Dobosh, C. P. Lillya, E. S. Magyar, and G. Scholes, "(Cross-conjugated dienyl)tricarbonyliron Cations. III. The Parent Cation," *Inorg. Chem.*, *19*, 228 (1980).

P. A. Dobosh, P. D. Ellis, Yu-Chung Chou, "INDO Calculations of Proton Chemical Shifts," *J. Mag. Res.*, *36*, 439 (1979).

Grants Active: $2,000 Faculty Grant "Research and Educational Application of Molecular Orbital Theory." $1,000 UMass Computer Center Grant "MO Theory of NMR Chemical Shifts."

EWING, SHEILA P. (b. 1949) Assistant Professor. B.S., 1971, University of Tennessee, Ph.D., 1974, University of California at Berkeley. *Physical Organic Chemistry*. Carbanion structures--mechanism of amino acid ester hydrolysis.

S. P. Ewing, D. Lokshen, and W. P. Jencks, "Mechanism of Cleavage of Carbamate Anions," *J. Am. Chem. Soc.*, *102*, 3072 (1980).

Grant Active: $24,140 NSF 69A "A Study of the Mechanism of Carbon Dioxide Catalyzed Amino Acid Ester Hydrolysis *via* a Proposed Carbamate Intermediate."

HIXSON, SUSAN H. (b. 1944) Associate Professor. B.S., 1965, University of Michigan, Ph.D., 1970, University of Wisconsin. *Bio-organic Chemistry*. Photoaffinity labeling of active sites of enzymes.

S. H. Hixson, *T. F. Brownie, *C. C. Chua, *B. B. Crapster, L. M. Satlin, S. S. Hixson, C. O. L. Boyce, M. Ehrich, and E. K. Novak, "Bifunctional Aryl Azides as Probes of the Active Sites of Enzymes," *Ann. N. Y. Acad. Sci.*, *346*, 104 (1980).

S. H. Hixson, *S. F. Burroughs, *T. M. Caputo, *B. B. Crapster, *M. V. Daly, *A. W. Lowrie, and *M. L. Wasko, "Reaction of p-Azidophenacyl Iodoacetate, a Photolabile Reagent, with Yeast Alcohol Dehydrogenase," *Arch. Biochem. Biophys.*, *192*, 296 (1979).

J. Ofengand, I. Schwartz, G. Chinali, S. S. Hixson, and S. H. Hixson, "Photoaffinity-probe-modified tRNA for the Analysis of Ribosomal Binding Sites," *Methods Enzymol*, *46*, 683 (1977).

HIXSON, SUSAN H., cont'd

Grants Active: \$24,925 NSF 69A "Purchase of Equipment for Biochemical Instrumentation for Photochemical Labeling of Enzymes." \$5,500/yr. PRF "Photochemical Labeling of Enzymes." \$4,000/yr. Research Corporation "Photochemical Labeling of Yeast Alcohol Dehydrogenase and Porcine Pepsin with Aryl Azides."

KOHLER, SUSAN J. (b. 1948) Assistant Professor. A.B., 1970, Mount Holyoke College, Ph.D., 1975, University of California at Berkeley. Physical Chemistry. Structure and function of biological membranes--solid phase nmr.

S. J. Kohler and M. P. Klein, "^{31}Phosphorus NMR Chemical Shielding Tensors of L-O-Serine Phosphate and 3′-Cytidine Monophosphate," J. Am. Chem. Soc., 99, 8290 (1977).

S. J. Kohler and M. P. Klein, "Orientation and Dynamics of Phospholipid Headgroups in Bilayers and Membranes Determined from ^{31}P NMR Chemical Shielding Tensors," Biochemistry, 16, 519 (1977).

S. J. Kohler, J. D. Ellett, and M. P. Klein, "^{31}P Chemical Shielding Tensors of χ-$Ca_2P_2O_7$," J. Chem. Phys., 64, 4451 (1976).

S. J. Kohler and M. P. Klein, "^{31}P Chemical Shielding Tensors of Phosphorylethanolamine, Lecithin, and Related Compounds: Applications to Headgroup Motion in Model Membranes," Biochemistry, 15, 967 (1976).

Grants Active: \$38,380 (1st yr.) NIH "^{31}P and ^{2}H NMR Investigation of Phospholipid Bilayers." \$24,900 NSF 69A "Power Amplifiers for NMR." \$6,900/yr. Research Corporation "^{31}P and ^{2}H NMR Investigation of Interaction of Ca^{2+} with Phospholipid Bilayers." \$5,000/yr. PRF "Phospholipid--Ion Interactions in Phospholipid Bilayer Model Systems: A Nuclear Magnetic Resonance Study."

SMITH, JANICE G. (b. 1951) Assistant Professor. A.B., 1973, Cornell University, Ph.D., 1978, Harvard University. Synthetic Organic Chemistry. New synthetic methods--synthesis of molecules of pharmacological interest.

E. J. Corey and J. G. Smith, "The Total Synthesis of Gibberellic Acid A New and Effective Route to a Key Tricyclic Intermediate," J. Am. Chem. Soc., 101, 1038 (1979).

Grants Active: \$13,007 NSF "New Applications of the Oxy-Cope Rearrangement in Organic Synthesis." \$7,500/yr. Research Corporation "The Use of Unsaturated Organosilanes in Ring-Forming Reactions." \$5,000/yr. PRF "New Applications of the Oxy-Cope Rearrangement in Organic Synthesis." \$700 Faculty Grant "The Synthesis of Spiro Cyclopentenones by Claisen Rearrangement."

SPITLER, MARK T. (b. 1950) Assistant Professor. B.S., 1972, Stanford University, Ph.D., 1977, University of California at Berkeley. Physical Chemistry. Electrochemistry of the excited state--photoelectrochemistry of semiconductors.

H. Gerischer, M. T. Spitler, and F. Willig, in Electrode Processes, 1979, S. Bruckenstein, et al., ed., The Electrochemical Society, Princeton, 1980, p. 115-135.

Spitler, M. Lübke, M. Gerischer, H., "Studies of Dye Sensitization of ZnO through Total Internal Reflection," Berichte der Bunsengesellschaft fur Physikalische Chemie (1979).

Spitler, M. Lübke, M., Gerischer, H., "Role of Triplet States in the Dye Sensitization of ZnO Electrodes, "Chem. Phys. Lett., 56, 577-581 (1978).

SPITLER, MARK T., cont'd

Spitler, M., Calvin M., "Electron Transfer at Sensitized TiO_2 Semiconductor Electrodes," J. Chem. Phys., 66, 4294-4305 (1977).

Grants Active: $39,940 DOE "Studies of the Photoelectrochemistry of Organic Dyes." $24,350 NSF 69A "Instrumentation for Photoelectrochemical Research." $7,100/yr. Research Corporation "Electrochemistry and Photoelectrochemistry of Transition Metal Dichalcogenides."

WEAVER, EDWIN S. (b. 1933) Professor. B.S., 1954, Yale University, Ph.D., 1959, Cornell University. Physical Chemistry. Structure of fibrous proteins, membranes and membrane models.

"Biochemistry" and "Chemistry" in Collier's Encyclopedia Yearbook, 1978, MacMillan Education Corporation, New York.

WILLIAMSON, KENNETH L. (b. 1934) Professor and Chairman. B.A., 1956, Harvard University, Ph.D., 1960, University of Wisconsin. Organic Chemistry. Conformational analysis by nmr--nmr studies of insulin, steroids, peptides.

Eight Publications. 1976-80.

L. T. Plante, K. L. Williamson, and E. J. Pastore, "Preparation of Folic Acid Specifically Labeled with Carbon-13 in the Benzoyl Carbonyl," in Methods in Enzymology, D. B. McCormick and L. D. Wright, eds., Part E., p 533 (1980).

K. L. Williamson and R. J. P. Williams, "Conformational Analysis by Nuclear Magnetic Resonance: Insulin," Biochemistry, 18, 5966 (1979).

K. L. Williamson, L. G. Pease, and J. D. Roberts, "Conformational Analysis by Nuclear Magnetic Resonance Spectroscopy: Nitrogen-15 NMR of a Cyclic Pentapeptide," J. Am. Chem. Soc., 101, 714 (1979).

K. L. Williamson, M. U. Hasan and D. R. Clutter, "Conformational Analysis by NMR: ^{13}C Nuclear Magnetic Resonance Spectra of Saturated and Unsaturated Carboxylic Acids and Their Corresponding Esters and Anhydrides, J. Mag. Res., 30, 367 (1978).

Grants Active: $40,936/yr. NIH "Conformational Analysis by NMR." $16,555 NSF 69A "Conformational Analysis by NMR."

MUSKINGUM COLLEGE

New Concord, OH 43762

Fall 1980 ug enrollment 983

Degrees offered B.S., B.A.

Telephone 614-826-8211 ext. 231

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 3 . 2. Support staff, FTE's: Sec'y 0.20 Stockrm 0.50 Technical 0
3. 1980 seniors & their placement: Total 7 Grad. school 0 Industry 4 Professional schools 2 Other 1 .
4. Senior majors, average past five years: 8 .
5. Undergraduates involved in research, average past five years:
   Academic year 8 Summer 2
6. Master's program? no Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years: N/A

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 14,400
2. Instrumentation:

NMR (Varian T-60)	UV-Visible - Cary 15,
MS (Varian EM 600)	Heath 8 Mini Computer
GC (Varian-Aerograph 700;H-P 5750)	Emission Spectrograph, B.&L.
IR (P-E 337; Beckman IR-20A)	HPL Chromatography - Dupont 841
AA (Varian 120)	Wenking Potentiostat 70TS1

3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 29 Computer literature search service? yes Separate chemistry or science library? yes Librarian? no Standing orders for review series and annual reviews (past five years) 7 .

4. Computer facilities:

Department: Decwriter II, Heath 8 Mini Computer.
Campus: DEC VAX 780 System.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   About $1000/yr for chemicals

2. Departmental grants:

   NSF-URP $4600 LUBRIZOL FNDN. $500

3. Faculty teaching loads: Contact hours 15 Load credit for research? no .

4. Sabbatical or leave support for research:

   Sabbatical Leave, 8th year, 2/3 salary for year, or ½ year at full rate of pay.

   Special Leave Program is also available.

FACULTY PROFILE

GERLACH, E. R. (b. 1931) Associate Professor. B.S., 1956, Muskingum College, M.S., 1962, Ohio State University. Analytical Chemistry. Trace metals in the environment.

KNIGHT, JUDITH M. (b. 1941) Visiting Associate Professor. B.S., 1963, Muskingum College, M.S., 1966, Wayne State University, Ph.D., 1976, University of Wisconsin-Milwaukee. Metal complexes of derivatives of 2-formylpyridine thiosemicarbozone of antineoplastic and/or antiarthritic interest.

"Electronic Substituent Effects upon Properties of 5-Substituted-2-formylpyridine Thiosemicarbazones and Their Metal Complexes," Judith M. Knight, Harry Whelan, and David H. Petering, J. Inorg. Biochem., 11, 327 (1979).

"Some Properties of Copper and Zinc Complexes of 2-Formylpyridine Thiosemicarbazone," W. E. Antholine, J. M. Knight, and D. H. Petering, Inorg. Chem., 16, 569 (1977).

"Studies of the Reaction of 2-Formylpyridine Thiosemicarbazone and Its Iron and Copper Complexes with Biological Syatems," William E. Antholine, Judith M. Knight, Harry T. Whelan, and David H. Petering, Mol. Pharmacol., 13, 89 (1977).

"Inhibition of Tumor Cell Transplantability by Iron and Copper Complexes of 5-Substituted-2-formylpyridine Thiosemicarbazones," William E. Antholine, Judith M. Knight, and David H. Petering, J. Med. Chem., 19, 339 (1976).

RATAICZAK, RAYMOND D. (b. 1944) Associate Professor. B.S., 1966, Waynesburg College, Ph.D., 1970, St. Louis University. Determination of viscosity versus temperature of euteclic solutions. Ion-pairing from conductance measurement.

WALLACE, WILLIAM J. (b. 1935) Professor and Chairperson. B.S., 1956, Carson-Newman College, Ph.D., 1961, Purdue University. Inorganic Chemistry. Electrocatalytic studies of the chromous/chromic couple.

Grant active 1980-1981: NASA-Lewis Research Center, $16437, Electrocatalytic Studies of the Chromous/Chromic Couple.

NEWBERRY COLLEGE

Newberry, SC 29108

Fall 1980 ug enrollment 800

Degrees offered A.B. and B.S.

Telephone (803) 276-5010,ext. 238

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 3 . 2. Support staff, FTE's: Sec'y 1/2 Stockrm 1/2 Technical 0
3. 1980 seniors & their placement: Total 6 Grad. school 1 Industry 3 Professional schools 1 Other 1 .
4. Senior majors, average past five years: 6 .
5. Undergraduates involved in research, average past five years:
   Academic year 3 Summer 5
6. Master's program? no Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 14,000
2. Instrumentation:

   NMR (Varian EM 300X)
   GC (P-E 990)
   IR (P-E 700)
   UV-VIS (P-E 124)

3. Library resources: CA? yes Volume indices? yes Collected indices? no Total journal subscriptions? 12 Computer literature search service? no Separate chemistry or science library? yes Librarian? no Standing orders for review series and annual reviews (past five years) 1 .
4. Computer facilities: Digital Corporation PDP 11/50 - DECscopes and DECwriters.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Approximately $500/year
2. Departmental grants: N/A
3. Faculty teaching loads: Contact hours 18-20 Load credit for research? 6 for 1 faculty member.
4. Sabbatical or leave support for research:
   Limited and not guaranteed; on a year-by-year basis. Two leaves per year for the entire faculty.

FACULTY PROFILE

BEAM, CHARLES F. (b. 1940) Associate Professor and Director of Scientific Research, B.S., 1963, The City College of the City University of New York, Ph.D., 1970, University of Maryland. Postdoctoral Research Associate, 1968-71, Duke University; 1971-72, Lehigh University. Organic and Polymer Chemistry. Strong-base, monomer and polymer, and medicinal syntheses; pyrolysis studies.

Twenty publications, 1976-80.

*J.D. Wilson, *T.D. Fulmer, *L.P. Dasher, and C.F. Beam, "A New Synthesis of 2-Pyrazolin-5-ones from the Condensation of $C(\alpha)$,N-Dilithiophenylhydrazones with Diethyl Carbonate", J. Heterocycl. Chem., 17, 389 (1980).

*J. Brown, *K.L. Sides, *T.D. Fulmer, and C.F. Beam, "A Facile Preparation of 4-Quinolinols by the Condensation of Dilithiobenzoylacetone or $C(\alpha)$, O-Dilithiooxime with Methyl Anthranilate or 5-Chloroisatoic Anhydride", J. Heterocycl. Chem., 16, 1669 (1979).

*T.D. Fulmer, *L.P. Dasher, *B.L. Bobb, *J.D. Wilson, *K.L. Sides, and C.F. Beam, "An Improved Synthesis of 3,5-Disubstituted Isoxazoles and Pyrazoles from $C(\alpha)$,O-Dilithiooximes and $C(\alpha)$,N-Dilithiophenylhydrazones", J. Heterocycl. Chem., 17, 799 (1980).

C.F. Beam, *J. Brown, *D.R. Dawkins, *W.P. Fives, and Ned D. Heindel, "A New Method for the Preparation of 2-Carboalkoxypyrazolo (5, 1-b) quinazolin-9(1H)-ones", J. Heterocycl. Chem., 16, 957 (1979).

C.F. Beam, *J. Brown, *R.W. Hall, *F.C. Bernhardt, *K.L. Sides, *M.H. Mack, and *D.A. Lakatosh, "Synthesis of Monomers and Copolymers from Isatoic Anhydrides", J. Polymer Sci., Chem. Ed., 16, 2679 (1978).

Grant Active, 1979-81: PRF, type B, $13,000, Novel Syntheses with Reactive Polymetalated Intermediates.

JEREMIAS, CHARLES G. (b. 1920) Professor, B.S., 1942, University of Georgia, Ph.D., 1949, Tulane University. Organic Chemistry. Preparation of insecticides.

PARK. CONRAD B. (b. 1919) Professor, B.S.., 1941, Newberry College, M.A., 1943, and Ph.D., 1952, University of North Carolina at Chapel Hill. Physical and Inorganic Chemistry. Surface-active agents.

NIAGARA UNIVERSITY

Niagara University, N.Y. 14109

Fall 1980 ug enrollment 3500

Degrees offered B.A.,B.S.,B.S*
* Biochemistry

Telephone (716)285-1212

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5 . 2. Support staff, FTE's: Sec'y 1 Stockrm 0.75 Technical 0.25
3. 1980 seniors & their placement: Total 10 Grad. school 2 Industry 1
   Professional schools 7 Other N/A .
4. Senior majors, average past five years: 8 .
5. Undergraduates involved in research, average past five years:
   Academic year 2 Summer 1
6. Master's program? No Master's degrees conferred, average past five years? N/A
7. National honors, undergraduate or senior majors, past five years:
   N/A

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 10,000
2. Instrumentation:

NMR (PE R24A)	UV-Visible (PE 200)
MS (Varian EM600)	LC (ISCO)
GC (F&M and Varian)	Fluorescence (Farrand)
IR's (PE 21 and 710B)	Polarograph (Princeton 364)
AA (PE 370A)	Photochemical (Hanovia and Rayonet)

3. Library resources: CA? yes Volume indices? yes Collected indices? no Total journal subscriptions? 22 Computer literature search service? yes Separate chemistry or science library? yes Librarian? no Standing orders for review series and annual reviews (past five years) 12 .

4. Computer facilities: Department; DEC MINC 11.
   Campus; Honeywell 400 time sharing system.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   About $4,000/yr for chemicals and equipment

2. Departmental grants:
   NSF SDIP grant, $30,000

3. Faculty teaching loads: Contact hours 12 Load credit for research? no .

4. Sabbatical or leave support for research: Full salary for six months, one-half salary for twelve months. Frequency averages eight years.

FACULTY PROFILE

FORRESTER, JOSEPH J. (b.1927), Associate Professor. B.S., 1950, Canisius College, M.S., 1951, Univ. of Iowa. Organic Chemistry. Oxidations of organometallics, reactions of mixed halogens.

GALLAGHER, WAYNE A. (b.1927), Professor. A.B., 1950, SUNY at Albany, Ph.D., 1965, SUNY at Buffalo. Biochemistry. Reactions of porphyrins and heme compounds in various solvent systems.
G.A. Karns*, W.A. Gallagher, W.B. Elliott, Dimerization Constants of Water-Soluble Porphyrins in Aqueous Alkali, Bioorganic Chemistry, 8, 69-81 (1979).

KRAUSE, JOSEF G. (b.1942), Professor and Chairman. B.S., 1963, Hobart College, Ph.D., 1967, Northeastern Univ. Organic Chemistry. Synthesis and reactions of low molecular weight nitrogen-containing compounds.
J.G. Krause, M.S. Gordon*, and S. Sojka, C_{13} NMR Studies of Substituent Effects on Oximes and Hydrazones, J. of Magnetic Resonance in press.
J.G. Krause, M.S. Gordon*, M.A. Linneman-Mohr*, R.R. Parchue*, Hydrazides and Hydrazones from Carbazates, Synthesis, 244 (1980).
J.G. Krause, Mechanism of the Reaction of Arysulfonylnitrenes with Polynuclear Aromatics, Chemistry and Industry, 271 (1978).

STROHL, ARTHUR N. (b.1950), Assistant Professor, B.S., 1971, Lafayette College, M.S., 1973, Ph.D., 1979, Univ. of Massachusetts. Analytical Chemistry. Coulometry and amperometry of flow-through electrodes, flow-injection analysis.
D.J. Curran and A.N. Strohl, Ion Exchange Conversion of Cyanine Dye Iodides to Chlorides for Electrochemical Studies, Photogr. Sci. Eng., 21, 148 (1977).
A.N. Strohl and D.J. Curran, Reticulated Vitreous Carbon Flow-Through Electrodes, Anal. Chem., 51, 353 (1979).
A.N. Strohl and D.J. Curran, Controlled Potential Coulometry at a Reticulated Vitreous Carbon Flow-Through Electrode, Anal. Chem., 51, 1050 (1979).
A.N. Strohl and D.J. Curran, Flow-Injection Analysis with Reticulated Vitreous Carbon Flow-Through Electrodes, Anal. Chem., 51, 1045 (1979).
A.N. Strohl and D.J. Curran, Reticulated Vitreous Carbon as a Hydrogen Ion Electrode, Anal. Chim. Acta, 108, 379 (1979).

ZIELINSKI, THERESA J. (b.1941), Assistant Professor. B.S., 1963, Fordham Univ. School of Education, M.S., 1968, Ph.D., 1973, Fordham Univ. Graduate School of Arts and Sciences. Theoretical Chemistry. Molecular orbital methods, empirical potential functions, drug nucleic acid interactions, ab initio studies of biomolecules.
Seven publications 1978-1980.
T.J. Zielinski, M. Shibata, and R. Rein, Ab initio STO-3G Optimized

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ZIELINSKI, THERESA J. cont'd

Geometries for Uracil and the Tautomer 4-Hydroxyuracil, Inter. J. of Quantum Chem., (1980), in press.

M. Shibata, T.J. Zielinski, and R. Rein, Normal Mode Vibrational Frequencies and Thermodynamic Properties of Uracil and 4-Hydroxyuracil, Inter. J. of Quantum Chem., Kyoto Symposium Proceedings, 18, 323, (1979).

T.J. Zielinski, M. Shibata, and R. Rein, Ab initio STO-3G Energy of Tautomerism for Uracil, Inter. J. of Quantum Chem.: Quantum Biology Symposium, 6, in press.

T.J. Zielinski, D.L. Breen, and R. Rein, A MINDO/3 Study of Some Hydrogen Bonded Systems, J. Am. Chem. Soc., 100, 6266 (1978).

T.J. Zielinski, D.L. Breen, K. Haydock, R. Rein, and R. MacElroy, Optimum Geometries and Relative Energies for Guanine, the Imino-Enol Tautomer of Guanine, the Enol Tautomer of Guanine, Adenine and the Imino Tautomer of Adenine as Found by the MINDO/2 SCF MO Method, Inter. J. of Quantum Chem.: Quantum Biology Symposium, 5, 355 (1978).

OBERLIN COLLEGE
Oberlin, OH 44074

Fall 1980 ug enrollment 2750
Degrees offered B.A., M.A.
Telephone (216) 775-8300

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 7 . 2. Support staff, FTE's: Sec'y 1 Stockrm 1 Technical 1
3. 1980 seniors & their placement: Total 30 Grad. school 7 Industry 0 Professional schools 10 Other 13 .
4. Senior majors, average past five years: 26 .
5. Undergraduates involved in research, average past five years:
   Academic year 10 Summer 7
6. Master's program? Yes Master's degrees conferred, average past five years? 0
7. National honors, undergraduate or senior majors, past five years:
   1976 - Frederick T. Wagner, NSF graduate fellowship
   1980 - Leslie D. Anderson, NSF graduate fellowship
   1980 - Robert C. Scarrow, NSF graduate fellowship

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 24,100
2. Instrumentation:
   Laser Raman Spectrometer (Spex, Ramalog; Coherent Radiation, CR-5)
   MS(Nuclide Analysis Associates)
   MS-GC(Hitachi, RMS-4; PE 881)
   UV-Vis-IR Spectrometer (Cary 17)
   IR Spectrometers (PE 621, 700, 727)
   UV-Vis, 3.5M Grating Spectrograph (B&L)
   NMR (PE, R 12B with VT, decoupling)
   Liquid Scintillation Counter (Packard 3310)
3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 53 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? Yes Standing orders for review series and annual reviews (past five years) 15 .
4. Computer facilities: Xerox Sigma 9 model 2 central processing unit.
   50 time-sharing terminals (2 in Chemistry Department)
   Nicolet 1180 Lab. Data System

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Common chemicals and glassware.
   Competitive small grants through College R&D Committee.
2. Departmental grants:
   $2500 Shell Companies Foundation; $7000 DuPont
3. Faculty teaching loads: Contact hours 10 Load credit for research? No .
4. Sabbatical or leave support for research: Sabbatical leave: Normally every 7th yr. but may be earlier. Full salary for 1 sem. or ½ salary for full yr. Research status appointment: Usually 2-3 awards/yr. Applications may be made at any time. Full salary plus additional supplementary stipend for one year.

FACULTY PROFILE

ACKERMANN, MARTIN N. (b. 1941) Professor. B.S., 1963, Carnegie Institute of Technology, Ph.D., 1966, University of California, Berkeley. *Inorganic Chemistry.* Inorganic synthesis; transition metal carbonyl complexes of nitrogen ligands.

Nine publications, 1976-1980.

M. N. Ackermann, *D. J. Dobmeyer, and *L. C. Hardy, "Tungsten Pentacarbonyl Complexes of *cis-* and *trans-*1,2-Dimethyldiazene and 1,2-Dimethylhydrazine. Preferential Oxidation of Coordinated Hydrazine to the *cis*-Diazene Complex," *J. Organometal. Chem.*, *182*, 561 (1979).

M. N. Ackermann, *R. M. Willett, *M. H. Engiert, *C. R. Barton, and *D. B. Shewitz, "Diazene Ligand Geometry Effects on the Formation and Properties of Metal Carbonyl Complexes. Group VIB Pentacarbonyl Complexes of *cis-* and *trans-*1,2-Diisopropyldiazene and 1,2-Diisopropylhydrazine," *J. Organometal. Chem.*, *175*, 205 (1979).

M. N. Ackermann, N. C. Craig, *R. R. Isberg, *D. M. Lauter, and *E. P. Tacy, "Vibrational Spectra of *cis*-Dimethyldiazene-d_0, -1,1,1-d_3, and -d_6 (Azomethane)," *J. Phys. Chem.*, *83*, 1190 (1979).

M. N. Ackermann, "Determination of the Equilibrium Constant for Triiodide Formation: Use of a Less Toxic Solvent," *J. Chem. Educ.*, *55*, 795 (1978).

M. N. Ackermann, L.-J. Kou, *J. M. Richter, and *R. M. Willett, "Cyclopentadienylironcarbonyl Complexes of Cyclic Cis Azo Ligands. Diiron Bridging and Cationic Monometallic Compounds," *Inorg. Chem.*, *16*, 1298 (1977).

Grant active: Petroleum Research Fund, Type B, $11,000, Metal Carbonyl Complexes of Azo Ligands.

CARLTON, TERRY S. (b. 1939) Professor and Chairman. B.S., 1960, Duke University, Ph.D., 1963, University of California, Berkeley. *Theoretical Chemistry.* Electron correlation, electron densities.

R. F. Nalawajski and T. S. Carlton, "The Reference Coordinate Approach for Determining the Minimum Energy Reaction Path," *Acta Phys. Pol. A*, *53*, 321 (1978).

T. S. Carlton, "A Function for Testing the Reliability of Long-Range Electron Density in Atoms," *J. Chem. Phys.*, *70*, 584 (1979).

CRAIG, NORMAN C. (b. 1931) Professor. B.A., 1953, Oberlin College, Ph.D., 1957, Harvard University. *Physical Chemistry.* Vibrational spectroscopy and normal coordinate analysis of small molecules and organic ions, Raman spectroscopy of model biomembranes.

Twelve publications, 1976-1980.

N. C. Craig, *R. A. MacPhail, and *D. A. Spiegel, "Vibrational Assignments and a Potential Function for 3,3-Difluorocyclopropene-d_0, -d_1, and -d_2," *J. Phys. Chem.*, *82*, 1056 (1978).

N. C. Craig, M. N. Ackermann, *R. R. Isberg, *D. M. Lauter, and *E. P. Tacy, "Vibrational Spectra of *cis*-Dimethyldiazene-d_0, -1,1,1-d_3, and -d_6," *J. Phys. Chem.*, *83*, 1190 (1979).

N. C. Craig, *M. A. Kliewer, and *N. C. Shih, "*cis*-Methyldiazene," *J. Am. Chem. Soc.*, *101*, 2480 (1979).

N. C. Craig and I. W. Levin, "Vibrational Assignment and Potential Function for *trans*-Diazene (Diimide). Predictions for *cis*-Diazene," *J. Chem. Phys.*, *71*, 400 (1979).

CRAIG, NORMAN C., cont'd

N. C. Craig, *R. K.-Y. Lai, *L. G. Matus, *J. H. Miller, and *S. L. Palfrey, "Vibrational Spectra and a Potential Function for the Monofluorocyclopropenyl-d_0 and -d_2 Cations," J. Am. Chem. Soc., 102, 38 (1980).

Grants active: Petroleum Research Fund Grant, $11,000, Vibrational Spectroscopy of Fluorinated C_3 Ring Systems; Research Corporation Grant, $12,000, Vibrational Spectroscopy of Small Diazene Molecules; National Science Foundation, $24,800, Minicomputer Laboratory Data System for Raman Spectroscopy.

FUCHSMAN, WILLIAM H. (b. 1941) Associate Professor. B.A., 1963, Harvard University, Ph.D., 1967, The Johns Hopkins University. Biochemistry. Bioinorganic chemistry of hemeproteins, nitrogen fixation; chemistry of porphyrins and metalloporphyrins.

Seven publications, 1976-1980.

W. H. Fuchsman and C. A. Appleby, "Separation and Determination of the Relative Concentrations of the Homogeneous Components of Soybean Leghemoglobin by Isoelectric Focusing," Biochemica et Biophysica Acta, 579, 314-324 (1979).

W. H. Fuchsman and C. A. Appleby, "CO and O_2 Complexes of Soybean Leghemoglobins: pH Effects upon Infrared and Visible Spectra. Comparisons with CO and O_2 Complexes of Myoglobin and Hemoglobin," Biochemistry, 18, 1309-1321 (1979).

W. H. Fuchsman and A. J. Silversmith, "General Method for Overcoming Photoacoustic Saturation in Highly Colored Organic and Inorganic Solids," Analytical Chemistry, 51, 589-590 (1979).

W. H. Fuchsman, *J. M. Goldberg, *D. D. Levy, and *Q. R. Smith, "Raman Spectroscopic Evidence of Porphyrin-Phenyl Resonance Interactions in Tetraphenylporphin, Tetraphenylporphin Dication, and Copper(II) Tetraphenylporphin," Bioinorganic Chemistry, 9, 461-467 (1978).

W. H. Fuchsman, *Q. R. Smith, and *M. M. Stein, "Direct Raman Evidence for Resonance Interactions between the Porphyrin Ring System and Ring-Conjugated Substituents in Porphyrins, Porphyrin Dications, and Metalloporphyrins," Journal of the American Chemical Society, 99, 4190-4192 (1977).

Grants Active: Petroleum Research Fund (Type B), $13,000, Iron Porphyrin Vibrations; National Science Foundation (Research Equipment), $7930, Vibrational Probes of Hemeprotein Active Sites.

HAWKINS, PETER J. (b. 1922) Professor. B.Sc. (London), 1945, Ph.D. (London), 1950. Organic Chemistry. Synthesis.

SCHOONMAKER, RICHARD C. (b. 1930) Professor. B.Ch.E., 1952, Yale University, Ph.D., 1960, Cornell University. Physical Chemistry. High temperature chemistry, gas-surface interactions, structure and properties of surfaces, molecular beam scattering from surfaces.

A. P. Janssen and R. C. Schoonmaker, "An Auger and Reflection Electron Diffraction Investigation of Oxygen and Hydrogen Adsorption on Strontium Surfaces," Surf. Sci., 55, 109 (1976).

*Paul O'Connor and Richard Schoonmaker, "Desorption and Diffusion of Sodium Chloride Molecules Adsorbed on a Sodium Chloride (100) Crystal Surface," J. Phys. Chem., 80, 390 (1976).

SMITH, LEVERETT R. (b. 1949) Assistant Professor. B.A., 1970, University of California at Santa Cruz, Ph.D., 1976, Cornell University. *Organic Chemistry*. Reactions of possible preparative use; pheromone chemistry.

Nine publications, 1976-1980.

L. R. Smith, "Schemes and Transformations in the $(CH)_8$ Series: The 'Valence Isomers' of Cyclooctatetraene," *J. Chem. Educ.*, *55*, 569 (1978).

L. R. Smith and C. F. Wilkinson, "The Influence of Steric Factors on the Interaction of Isomeric Phenyloxazoles and Phenylthiazoles with Microsomal Oxidation," *Biochem. Pharmac.*, *27*, 2466 (1978).

L. R. Smith, H. J. Williams, and R. M. Silverstein, "Facile Synthesis of Optically Active 2-Ethyl-1,6-dioxaspiro[4,4]nonane, Component of the Aggregation Pheromone of the Beetle *Pityogenes chalcographus* (L.)," *Tetrahedron Letters*, 3231 (1978)

L. R. Smith and H. J. Williams, "Glutamic Acid in Pheromone Synthesis: A Useful Chiral Synthon," *J. Chem. Educ.*, *56*, 696 (1979).

*C. Phillips, *R. Jacobson, *B. Abrahams, H. J. Williams, and L. R. Smith, "Useful Route to 1,6-Dioxaspiro[4.4]nonane and 1,6-Dioxaspiro[4.5]decane Derivatives," *J. Org. Chem.*, *45*, 1920 (1980).

Grants active: Petroleum Research Fund ($10,000 for 1979-81) and Research Corporation ($9,360 for 1980-82), Facile Route to 1,6-Dioxaspiro[4.4]nonane and [4.5]decane Moieties: Application to the Synthesis of Pheromones and other Natural Products, and to Related Heterospirocycles.

OCCIDENTAL COLLEGE
Los Angeles, CA 90041

Fall 1980 ug enrollment 1634
Degrees offered B.A.
Telephone (213) 259-2761

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 6-1/2 2. Support staff, FTE's: Sec'y 1/4 Stockrm 1 Technical 1/2
3. 1980 seniors & their placement: Total 13 Grad. school [illegible] Industry 0
Professional schools 5 Other 5 .
4. Senior majors, average past five years: 22 .
5. Undergraduates involved in research, average past five years:
Academic year 18 Summer 11
6. Master's program? No Master's degrees conferred, average past five years? N/A
7. National honors, undergraduate or senior majors, past five years:

1976 Ann Hagerman, NSF Fellowship;

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 11,456 (assignable)
2. Instrumentation:

NMR (Varian EM-360A with var. temp. probe)
MS (Varian EM-600 with direct probe, Bendix MA-3)
UV-VIS (GCA/McPherson EU-721D) Beckman DB (2)
IR (P-E 397, 237, 137)
AA I.L. 551 Video, Graphite Furn. Model 655
DTA, TGA, DSC (duPont 900-950)
GC (2 H-P 5700A, 5880A)
Electrochem. (PAR-174, 2 Beckman 30)
Liq. Scint. (Beckman LS-100C)
Tronac 450 Calorimeter

3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 53 Computer literature search service? no Separate chemistry or science library? yes Librarian? no Standing orders for review series and annual reviews (past five years) 26 .

4. Computer facilities: Department; minicomputer, Data General Nova 1200, Pertec 5M6 complete with instrument interfacing, Tektronix 4010 Graphics Terminal, HP 7225A Plotter, Campus: Prime 550 with terminal in chemistry

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
Approx. $1000/yr. chemicals and glassware; $4000/yr. for equipment

2. Departmental grants:
DuPont College Science Grant, $7,000
NSF Small Instrument Program, $24,900, $10,880, $25,000

3. Faculty teaching loads: Contact hours 11 Load credit for research? No

4. Sabbatical or leave support for research: Faculty can apply for sabbatical leave at full salary for 1/3 year (one term), or 1/3 salary full year every fifth year.

FACULTY PROFILE

AMEY, Ralph L. (b. 1937) Associate Professor. A.B., 1959, Pomona College, Ph.D., 1964, Brown University. Physical Chemistry. Thermodynamic properties of solutions.

CLELAND, George H. (b. 1921) Professor. A.B., 1942, Occidental College, Ph.D., 1951, California Institute of Technology. Organic Chemistry. Synthesis of novel amino acids and the mechanism of the Meerwein reaction.

G.H. Cleland, The Synthesis of o-Chlorocinnamic Acid via the Meerwein Reaction, J. Chem. Educ., 55 (1978).

DE HAAN, Frank P. (b. 1934) Professor. A.B., 1957, Calvin College, Ph.D., 1961, Purdue University. Physical Organic Chemistry. Mechanisms of Electrophilic aromatic substitution reactions.

F.P. De Haan, W.D. Covey, G.L. Delker, *N.J. Baker, *J.F. Feigon, *K.D. Miller, *E.D. Stelter, On the Mechanism of Friedel-Crafts Acylation and Sulfonylation Reactions, J. Amer. Chem. Soc., 101, 1336 (1979).

F.P. De Haan, W.D. Covey, *M.S. Anisman, *R.L. Ezelle, *J.E. Margetan, *K.D. Miller, *S.A. Pace, *S.L. Pilmer, *M.J. Sollenberger and *D.S. Wolf, A Kinetic Study of the Friedel-Crafts Benzylation Reaction in Excess Aromatic and in Nitromethane, J. Amer. Chem. Soc., 100, 5944 (1978).

Grants active 1979-1981: National Science Foundation, $66,000 Mechanisms of Electrophilic Aromatic Substitutions Reactions.

LAMBERT, Frank L. (b. 1918) Professor. A.B., 1939, Harvard University, Ph.D., 1942, University of Chicago. Organic Chemistry. Electrochemistry of organic halogen compounds.

MCANALLY, John S. (b. 1918) Professor. B.S., 1938, M.A., 1940, Ph.D., 1950, Indiana University. Biochemistry. Analysis of pollutants in Los Angeles estuarial sediments.

SMITH, Robert E. (b. 1943) Assistant Professor. B.S., 1968, Ph.D., 1976, Brigham Young University. Bioorganic Chemistry. Mechanisms of Biologically Active Compounds.

WEST, C. David (b. 1937) Professor and Chair. A.B., 1959 Pomona College. Ph.D., 1964, Massachusetts Institute of Technology. Analytical Chemistry. Atomic emission and absorption spectrophotometry, fluorescence and luminescence and automation of chemical instrumentation.

C.D. West, H.G.C. Human, R.H. Sparks, A.R. Oakkes, The Use of a Spark as a Sampling-Nebulizing Device for Solid Samples in Atomic Absorption, Atomic Fluorescence and Inductively-Coupled Plasma Emission Spectrometry, Analyst., 101, 265 (1976).

C.D. West, H.G.C. Human, Self-Absorption and Doppler Temperatures of Emission Lines Excited in a Glow Discharge Lamp, Spectrochim. Acta, 31B, 81 (1976).

OHIO NORTHERN UNIVERSITY
Ada, Ohio 45810

Fall 1980 ug enrollment 2247
Degrees offered B.A., B.S.
Telephone (419) 634-9921

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 8 . 2. Support staff, FTE's: Sec'y 1/2 Stockrm 1 Technical 0
3. 1980 seniors & their placement: Total 9 Grad. school 2 Industry 2 Professional schools 2 Other 3 .
4. Senior majors, average past five years: 9 .
5. Undergraduates involved in research, average past five years:
   Academic year 4 Summer 1
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 32,000
2. Instrumentation:

   NMR (Varian EM 360)
   UV-Vis (Beckman Du; Perkin-Elmer 202)
   IR (Perkin Elmer 337)
   GC (2 Hewlet-Packard 5750; P-E 820)
   Dipolmeter (DM 01)
   X-ray D (Beckman-Toshibe ADG-301)
   Fluorimeter (Hitachi-Perkin-Elmer-204)
   Polarimeter (Rudolph Research DP 06)
   Atomic Absorption (Perkin Elmer 2380)
   Pulsed Polarograph (PAR 174A)

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 31 Computer literature search service? No Separate chemistry or science library? No Librarian? Yes Standing orders for review series and annual reviews (past five years) 33 .

4. Computer facilities:

   Campus (on same floor as chemistry department); DEC PDP 11/70

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   Approx. $4,500/yr. chemicals and glassware; Approx. $4,500/yr. for equipment.

2. Departmental grants:

   None

3. Faculty teaching loads: Contact hours 14 Load credit for research? Yes

4. Sabbatical or leave support for research:

   Faculty can apply for sabbatical leave at 50% salary full year, full salary for one quarter. Frequency average every 7th year.

OHIO NORTHERN UNIVERSITY

FACULTY PROFILE

HAIGHT, HOWARD L. (b. 1929) Professor. B.S., 1952, M.S., 1957, University of Nebraska, Ph.D., 1963, University of Iowa. *Inorganic Chemistry*. Preparation and properties of metal olefin compounds. Structures of metal olefin compounds. Instruction innovation in general chemistry.

D. J. Bettinger and H. L. Haight, "A Pre-Introductory College Chemistry Refresher Course", *J. Chem. Educ.*, *54*, 729 (1977).

HAWBECKER, BYRON L. (b. 1935) Professor and Chairman. B.A., 1957, Manchester College, M.S., 1962, University of Arizona, Ph.D., 1968, Kent State University. *Organic Chemistry*. Kinetic-mechanistic studies of molecular rearrangements involving electron deficient nitrogen. Synthesis of organic nitrogen compounds. Development of teaching models for chemical laboratory.

B. L. Hawbecker, *D. A. Radovich, and *L. G. Tillotson, "Preparation of Phenanthridone: A Multipurpose Experiment for the Organic Laboratory", *J. Chem. Educ.*, *53*, 398 (1976).

B. L. Hawbecker, D. W. Kurtz, T. D. Putnam, *P. A. Ahlers, and *G. D. Gerber, "The Aldol Condensation: A Simple Teaching Model for the Organic Laboratory", *J. Chem. Educ.*, *55*, 540 (1978).

B. L. Hawbecker, D. W. Kurtz, and *H. A. Elliott, "Dealkylation-Isomerization of p-Di-t-butylbenzene", *J. Chem. Educ.*, *55*, 777 (1978).

HOLMES, BERT E. (b. 1948) Associate Professor. B.S. and B.A., 1970, The College of Emporia, Ph.D., 1976, Kansas State University. *Physical Chemistry*. Kinetic studies of unimolecular gas-phase reactions.

Six publications, 1976-1980.

B. E. Holmes, "Scientist's Perspective of Liberal Education", *Ohio Northern U. Monograph*, *10*, May 1978.

B. E. Holmes, D. W. Setser and G. O. Pritchard, "Energy Disposal in the Three-Centered Elimination of DF from 1,1,2-Trifluoroethane-1-d_1", *Int. J. Chem. Kinetics*, *8*, 215 (1976).

B. E. Holmes and D. W. Setser, "Unimolecular Rate Constants for Ring Rupture and HCl Elimination from Chemically Activated 1-, 2-, and 3-Methylchlorocyclobutane and Chloromethylcyclobutane", *J. Phys. Chem.*, *82*, 2450 (1978).

B. E. Holmes and D. W. Setser, "Energy Disposal by the Four-Centered Unimolecular Hydrogen Chloride Elimination Reaction", *J. Phys. Chem.*, *82*, 2461 (1978).

B. E. Holmes and D. W. Setser in "Physical Chemistry of Fast Reactions", Vol. 2. (I. W. M. Smith, ed.), Plenum Press, New York/London (1980), Chap. 2.

Research Corporation Cottrell College Science Grant, $15,300, "Stereochemistry of the Gas Phase Four-Centered Hydrogen Halide Elimination Reaction."

HRUSCHKA, JUDITH K. (b. 1943) Assistant Professor. B.A., 1964, Manchester College, M.A., 1966, Harvard University. *Biochemistry*.

D. Stuart and J. Hruschka, "Blood, Coagulants and Anticoagulants", Kirk-Othmer: ENCYCLOPEDIA OF CHEMICAL TECHNOLOGY, Vol. 4, 3rd Ed., John Wiley & Sons, Inc., 1978. pp. 1-24.

KURTZ, DAVID W. (b. 1942) Associate Professor. B.S., 1964, Houghton College, Ph.D., 1972, Syracuse University. *Organic Chemistry*. Organic photochemistry. Rearrangements and pericyclic reactions.

B. L. Hawbecker, D. W. Kurtz, T. D. Putnam, and *P. A. Ahlers, and *G. D. Gerber, "The Aldol Condensation: A Simple Teaching Model for the Organic Laboratory", *J. Chem. Educ.*, *55*, 540 (1978).

B. L. Hawbecker, D. W. Kurtz, and *H. A. Elliott, "Dealkylation-Isomerization of p-Di-t-butylbenzene", *J. Chem. Educ.*, *55*, 777 (1978).

LAMB, ROBERT E. (b. 1945) Associate Professor. B.A., 1969, B.S., 1970, St. Louis University, M.S., 1974, Ph.D., 1975, University of Illinois. *Analytical Chemistry*. Ion selective electrodes. Pulse-modulated voltammetry. Determination of metals in biological and environmental samples.

R. S. Sohal and R. E. Lamb, "Intracellular Deposition of Metals in the Midgut of the Adult Housefly", *Musca Domestica*, *J. Insect Physiol.*, *23*, 1349 (1977).

R. S. Sohal and R. E. Lamb, "Storage-Excretion of Metallic Cations in the Adult Housefly", *Musca Domestica*, *J. Insect Physiol.*, *25* (2), 119 (1979).

P. K. Hopke, R. E. Lamb, and D. F. S. Natusch, "Multielement Characterization of Urban Roadway Dust", *Environ. Science & Tech.*, *14* (2), 164 (1980).

SADURSKI, E. ALAN (b. 1949) Assistant Professor. B.S., 1970, Oakland University, Ph.D., 1978, Wayne State University. *Inorganic-Organometallic Chemistry*. Synthesis, structure and nuclear magnetic resonance spectroscopy of main-group organometallics.

E. A. Sadurski, W. H. Ilsley, R. D. Thomas, M. D. Glick, and J. P. Oliver, "Metal-Silicon Bonded Compounds. 13. Synthesis, ^{1}H and ^{13}C NMR Spectra, and Structure of $[Mg_4(OCH_2CH_2OCH_3)_6(CH_3OCH_2CH_2OCH_3)_2]\{Hg[Si(CH_3)_2(C_6H_5)]_3\}_2$", *J. Am. Chem. Soc.*, *100*, 7761 (1978).

W. H. Ilsley, E. A. Sadurski, T. F. Schaaf, M. J. Albright, T. J. Anderson, M. D. Glick, and J. P. Oliver, "Metal-Silicon Bonded Compounds. 10. The Crystal and Molecular Structures of Bis-(triphenylsilyl)mercury, 2,2,4,4,6,6,8,8-Octamethyl-2,4,6,8-tetrasila-1,5-mercuracyclooctane and the Effective Covalent Radius of Mercury", *Journal of Organometallic Chemistry*, *190*, 257 (1980).

WILHELM, DALE L. (b. 1926) Professor. B.S., 1951, University of Illinois, M.S., 1952, Ph.D., 1954, University of Tennessee. *Inorganic Chemistry*. Heteropolyanions. Electrophoresis of inorganic ions.

D. L. Wilhelm, "The Challenge to Scientists' Values", *Register of Phi Lambda Upsilon*, *63*, No. 1, 11 (1978).

OHIO WESLEYAN UNIVERSITY
Delaware, Ohio 43015

Fall 1980 ug enrollment 2256
Degrees offered BA
Telephone (614) 369-4431

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 6 . 2. Support staff, FTE's: Sec'y 1 Stockrm 1 Technical 0
3. 1980 seniors & their placement: Total 7 Grad. school 2 Industry 2 Professional schools 2 Other 1 .
4. Senior majors, average past five years: 11 .
5. Undergraduates involved in research, average past five years:
   Academic year 4 Summer 4
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   NSF Fellowship - 1978, William A. Marritt

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 30,000
2. Instrumentation:
   - EM: Hitachi Scanning and transmission
   - NMR: Varian T-60 with low temp. probe
   - Vis-UV: Cary 219, with gel scanner, Beckman DU and DB
   - IR: Beckman Model 10 and Acculab 2
   - MS: Consolidated Electrodynamics, 620
   - Aminco-Bowman Ratio II fluorimeter
   - AA: Varian Techtron 120
   - GLC: Varian 3700 with FID,ECD,TCD
   - Parr bomb calorimeter
   - Electrochem: Polarograph, PAR 174, 175 w/173 Potentiostat/Galvanostat
3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 33 Computer literature search service? No Separate chemistry or science library? Yes Librarian? Yes Standing orders for review series and annual reviews (past five years) 15 .
4. Computer facilities: University: PDP 11/70 system with 30 terminals (hard copy + CRT) + 4 graphics terminals, and an Apple II minicomputer.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   Approximately $9000/yr instrumentation in 1979/80; approximately $5000/yr for chem. and glassware
2. Departmental grants:

   NSF-URP $10,000
   Standard Oil of Ohio $20,000
   General Electric $5000
   Master Chemical Corp. $1500
3. Faculty teaching loads: Contact hours 11-13 Load credit for research? no .
4. Sabbatical or leave support for research:

   Automatic 1 term (quarter) leave every four years, full pay.

FACULTY PROFILE

AMOS, RICHARD A. (b. 1946) Assistant Professor, B.S., 1968, College of Wooster, M.S., 1975, and Ph.D., 1977, University of Illinois, Organic Chemistry. Synthesis of biologically active molecules; polymer based organic synthesis.

A. I. Meyers and R. A. Amos, Studies Directed toward the Total Synthesis of Streptogramin Antibiotics. Enantiospecific Approach at the Nine-Membered Macrocycle of Griesoviridin. J. Am. Chem. Soc., 102, 870(1980).

R. A. Amos and J. A. Katzenellenbogen, An Efficient Synthesis of γ-Methylene-γ-butyrolactone (α'-Angelicalactone). Application to the Synthesis of Deoxyobtusilactone and Deoxyisobtusilactone. J. Org. Chem., 43, 560(1978).

R. A. Amos and J. A. Katzenellenbogen, Reaction of Copper Enolates of Esters with Propargylic Systems. Facile Preparation of 3, 4-Dienoic Esters, Stereoselective Rearrangement to (2E,4Z)- and (2E,4E)-Dienoic Esters, and Stereoselective Synthesis of a Fragrance from the Bartlett Pear. J. Org. Chem., 43, 555(1978).

R. A. Amos and J. A. Katzenellenbogen, Reaction of Lithium Dialkylcuprates with Acetoxy Epoxides. Assessment of a Method for Nucleophilic α - Alkylation of Ketones. J. Org. Chem., 42, 2537(1977).

Grant active 1980-82: Research Corporation, $14,910, A Polymer Directed Ring Closure of Macrocyclic Lactones.

DAY, GARY A. (b. 1950) Visiting Assistant Professor, B.S., 1972, Heidelberg College, Ph.D., 1980, Texas A&M University, Physical Chemistry. Coal Chemistry. Use of transition metal exchanged zirconium phosphates as catalysts for liquifaction of synthesis gases.

A. Clearfield, G. A. Day, A. Ruvarac and S. Milonjic, On the Mechanism of Ion Exchange in Zirconium Phosphates. XXIX. Calorimetric Determination of Heats of R^+ H^+ Exchange with α Zirconium Phosphate, J. Inorg. Nucl. Chem., In Press.

MCQUIGG, Robert D. (b. 1936) Professor and Chairman, B.S., 1958 Muskingum College, Ph.D., 1964, The Ohio State University, Physical Chemistry. Photochemical kinetics of atmospheric pollutants; computer modeling of kinetic and smog chamber mechanisms; photochemistry of coordination compounds; environmental science.

C. S. Kan, R. D. McQuigg, M. R. Witbeck, and J. G. Calvert, A Kinetic Flash Spectroscopic Study of the CH_3O_2 CH_3O_2 and CH_3O_2 and CH_3O_2 - SO_2 Reactions, Intern. J. of Chem. Kinetics, XI, 921-33(1979).

MILLER, THEODORE L. (b. 1940) Assistant Professor, B.S., 1966, Concord College, M.S., 1970, Marshall University, Ph.D., 1974, University of Cincinnati, Physical Chemistry. Luminescence spectroscopy, metal ions in biological systems, crocetin in atherosclerosis, and on-line computerized instrumentation

Six publications 1976-80.

D. J. Nelson, T. L. Miller, and R. B. Martin, Non-Cooperative Calcium(II) Removal and Terbium(III) Substitution in Carp Muscle Calcium Binding Parvalbumin, Bioinorg. Chem. 7, 325(1977).

T.L. Miller, Chemistry for Nonscience Students, J. Chem. Educ., 54, 502, (1977).

T. L. Miller and J. DiPaolantonio II, An Inexpensive Voltaic Cell, J. Chem. Educ., 55, 50(1978).

*E.J. Brush, M. Kalinowski and T. L. Miller, Heavy Metals in a Stretch of the Susquehanna River Badly Polluted with Acid Mine Effluents, Proc. Pa. Acad. Sci., 53, 179-188(1979)

*T. L. Miller, R. M. Cook, D. J. Nelson and A. D. Theoharides, Terbium Luminescence from the Calcium Binding Sites of Parvalbumin, J. Mol. Biol., 141, 223-226(1980).

Grant active 1979-80, NSF-69A towards an Aminco-Bowman Ratio II Fluorimeter, $9,200.

Grant active, 1980-82, PRF - Type B, Lanthanide Ions as Probes, $11,000.

VOGT, DANNY E. (b. 1953) Assistant Professor, B.A., 1975, Washington and Jefferson College, M.S., 1977, and Ph.D., 1979 Northwestern University, Biochemistry. Chemical modification of hemoglobin for treatment of sickle cell anemia, structure-activity relationships in protein modification.

WICK, LAWRENCE B. (b. 1917) Professor, B.S., 1940, M.S., 1943, and Ph.D., 1948, University of Michigan. Organic Chemistry. Synthesis and mechanisms in organic chemistry, organo-phosphorus compounds.

OLIVET NAZARENE COLLEGE
Kankakee, IL 60901

Fall 1980 ug enrollment 2073
Degrees offered BA, BS
Telephone 815-939-5393

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 3 . 2. Support staff, FTE's: Sec'y 0.3 Stockrm 0.2 Technical 0.5
3. 1980 seniors & their placement: Total 3 Grad. school 3 Industry - Professional schools - Other - .
4. Senior majors, average past five years: 5 .
5. Undergraduates involved in research, average past five years:
   Academic year 3 Summer 1
6. Master's program? No Master's degrees conferred, average past five years? N/A
7. National honors, undergraduate or senior majors, past five years: None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 12,000
2. Instrumentation:
   - NMR (Varian EM 360)
   - GC (Hewlett-Packard 5712, Varian A90 P3 Nester/Faust Anakro)
   - IR's (P-E 137 and Beckman IR 10)
   - AA (P-E 107)
   - UV - Visible (Beckman DU and DB)
   - Integrator-Recorder (HP 3380A)
   - HPLC (Varian 5010 with var. UV and RI detectors)
   - Nester/Faust Spanning-Band dist. column
   - Polarimeter & Polarograph (Sargent (V)
3. Library resources: CA? yes Volume indices? no Collected indices? no Total journal subscriptions? 23 Computer literature search service? yes Separate chemistry or science library? no Librarian? - Standing orders for review series and annual reviews (past five years) 8 .
4. Computer facilities: GA 16/480 w 192K mem. 19 Hazeltine terminals 3 S.W.T. Microcomputers.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   Olivet Research Associates (Alumni Assoc.) - $250
   Olivet support for chemicals and travel expenses - $700/year
   for matching grants - $8,500 (1979-1980)
2. Departmental grants:
   None
3. Faculty teaching loads: Contact hours ca 18 Load credit for research? Jan. term only
4. Sabbatical or leave support for research:
   After 5 years on tenure, each 7 years
   Full pay 1 semester, or half pay one year
   Subject to approval by the Dean

FACULTY PROFILE

TAYLOR, STEPHEN K. (b. 1944) Associate Professor. B.A., 1969, Pasadena College (now Point Loma College), Ph.D., 1974 , University of Nevada, Reno. *Organic and Organometallic Chemistry*. Reactions of epoxides, organic synthesis with organometallic compounds.

C.N. McEwen, S.F. Layton, and S.K. Taylor, "Field Desorption and Electron Impact Mass-Spectra of Ionic Dyes," *Analytical Chemistry*, 49, 922 (1977).

S.K. Taylor and C.B. Rose, "Regio- and Stereo- selective Reactions of trans-5,6-Epoxy-cis-cyclodecene," *J. Org. Chem.*, 42, 2175 (1977).

S.K. Taylor, F. Davidson, and D.W. Ovenall, "Carbon-13 Nuclear Magnetic Resonance Studies on Gelatin Crosslinking by Formaldehyde, *Phot. Sci. and Eng.*, 22, 134 (1978).

C.B. Rose and S.K. Taylor, "Stereospecific Synthesis and Carbon-13 NMR Spectra of 1,4-Epoxydecahydronaphthalenes" *J. Heterocyclic Chem.*, 16, 705 (1979).

S.K. Taylor, S.G. Bennett, I.Khoury and P. Kovacic, "Poly(p-phenylene) from p-Dibromobenzene, Magnesium and 1,4-Dichloro-2-butene", accepted for publication in J. of Polymer Science, 1981.

Grants active: Research Corporation Cottrell College Science Grant, 12,000 (1979) and renewal 11,500 (1980); NSF 69A 13,900 (1980 grant for HPLC) on "Friedel-Crafts Reactions of Epoxides."

HANSON, JOHN E. (b. 1935) Professor and Chairman. A.B., 1957, Olivet Nazarene College, Ph.D., 1964, Purdue University. *Inorganic Chemistry*. Organosilicon chemistry, coordination chemistry, vitamin B_{12} model compounds.

PACIFIC LUTHERAN UNIVERSITY

Tacoma, WA 98447

Fall 1980 ug enrollment 2653

Degrees offered B.A., B.S.

Telephone 206-383-7530

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 6 1/2 2. Support staff, FTE's: Sec'y 1/3 Stockrm 1 Technical 1/3
3. 1980 seniors & their placement: Total 16 Grad. school 5 Industry 2 Professional schools 8 Other 1.
4. Senior majors, average past five years: 18.
5. Undergraduates involved in research, average past five years:
   Academic year 10 Summer 1-2
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:
   One NSF fellowship, 1976, Susan C. Critchlow

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft² 7800
2. Instrumentation:
   - LC (Waters pump, P-E 55 detector)
   - NMR (Varian EM-360)
   - IR (P-E 457)
   - UV-vis (Cary 219)
   - GC (Packard 417)
   - AA (Inst. Labs.)
   - EPR (Varian E-3)
   - Liq. Scint. (Nuc. Chi. Unilux IIA)
   - X-ray diff. (GE XRD-5)
   - Dipolmeter (Weilheim D 812)
3. Library resources: CA? Yes Volume indices? Yes Collected indices? thru 8th Total journal subscriptions? 45 Computer literature search service? No Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 13.
4. Computer facilities: Campus: VAX11/780; Department: IMSAI-8080 microprocessor

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: None specifically budgeted. An estimated $1500-$2000 is utilized from general departmental accounts.
2. Departmental grants: None
3. Faculty teaching loads: Contact hours 14 1/2 Load credit for research? No
4. Sabbatical or leave support for research: Eligible every seven years for sabbatical at 50% salary full year or 100% salary for half year. Frequency averages every 12th year.

PACIFIC LUTHERAN UNIVERSITY

FACULTY PROFILE

ANDERSON, CHARLES D. (b. 1930) Professor. B.A., 1952, St. Olaf College; M.A., 1954, Ph.D., 1959, Harvard University. Organic Chemistry. Protecting groups; photochemistry of acetals; methylene bis-pyridinium compounds.

GIDDINGS, WILLIAM P. (b. 1933) Professor. B.A., 1954, DePauw University, M.A., 1956, Ph.D., 1959, Harvard University. Organic Chemistry; Environmental Chemistry. Nature of carbonium ion intermediates in organic solvolysis reactions; organic compounds in the atmosphere.

W.P. Giddings and M.B. Baker, "Sources and Effects of Monolayers on Atmospheric Water Droplets", J. Atmospheric Sciences, 34, 1957-64 (1977).

HUESTIS, LAURENCE D. (b. 1934) Professor. B.S., 1956, University of California, Berkeley; Ph.D., 1960, University of California, Davis. Organic Chemistry. Synthesis and properties of heterocyclic organic compounds; oxidation of aryl amines; geological and inorganic chemical aspects of the environment.

L. Huestis, "Sodium Perborate Oxidation of an Aromatic Amine", J. Chem. Ed., 54, 326 (1977).

L. Huestis, "Chemistry of Fossilization", J. Chem. Ed., 53, 285 (1976).

NESSET, BURTON L. (b. 1934) Associate Professor and Chairman. B.S., 1957, St. Olaf College, Ph.D., 1962, Purdue University. Physiological Biochemistry. Drug, hormone action; nutrition and biofeedback.

NICKSIC, TERRENCE D. (b. 1946) Assistant Professor. B.S., 1968, Gonzaga University; Ph.D., 1977, University of Illinois. Biochemistry. Neurochemistry, membrane receptors, colicin action.

T.D. Nicksic, P.Y. Law, A. Herz, and H. H. Loh, "Potentiation of Opiate Effects in the Neuroblastoma Cell Line N18TG-2 by Sulfatide Incorporation." Endogenous and Exogenous Opiate Agonists and Antagonists, ed. E.L. Way, Pergamon Press, 1979.

P.Y. Law, T.D. Nicksic, and H.H. Loh, "Enkephalin Inhibition of Adenylate Cyclase Activity in Neuroblastoma N18TG-2 Cells - Effect of Sulfatide Incorporation." Advances in Biochemical Pharmacology,

SWANK, DUANE D. (b. 1942) Professor. B.S., 1964, Washington State University; Ph.D. 1969, Montana State University. Physical/Inorganic Chemistry. Structure of inorganic compounds through spectrographic and crystallographic methods; inorganic complex ion studies; use of computers in undergraduate instruction.

D. Swank, G.F. Needham and R.D. Willett, "Crystal Structure and Magnetic Susceptibility of Di-μ-chloro-bis[chlorobis(tetramethylene sulfoxide)copper(II)], $Cu_2Cl_4(C_4H_8SO)_4$: An Antiferromagnetic Dimer," Inorg. Chem., 18, 761 (1979).

D.D. Swank, C.P. Landee and R.D. Willett, "Crystal Structure and Magnetic Susceptibility of Copper(II) Chloride Tetramethylsulfoxide [$CuCl_2$(TMSO)] and Copper (II) Chloride Monodimethylsulfoxide [$CuCl_2$ (DMSO)]:Ferromagnetic Spin-1/2 Heisenberg Linear Chains," Phys. Rev. B., 20, 2154 (1979).

SWANK, DUANE D., cont'd

R.D. Willett, C.P. Landee, R. Gaura, D.D. Swank, H.A. Groenendijk and A.J. van Duyneveldt, "Magnetic Properties of One-Dimensional Spin 1/2 Ferromagnets: Metamagnetic Behavior of $(C_6H_{11}NH_3)CuCl_3$", *J. Magn. Magn. Mater.*, *15-18*, 1055 (1980).

D.D. Swank, C.P. Landee and R.D. Willett, "Magnetic Interactions of Copper(II) Trimers", *J. Magn. Magn. Mater.*, *15-18*,379 (1980).

D.D. Swank and R.D. Willett, "The Crystal Structure and Magnetic Susceptibility of $Cu_2Br_4(C_5H_5N)_2$: Di-μ-bromobis [bromo (pyridine) copper(II)], A One-Dimensional Chain of Dimer", *Inorg. Chem.*, *19*, 2321 (1980).

TOBIASON, FRED L. (B. 1936) Professor, B.A., 1958, Pacific Lutheran University; Ph.D., 1963, Michigan State University. *Physical and Polymer Chemistry*. Polymer chemistry, dipole moments, chain configurational calculations, structure characterization.

F.L. Tobiason, *G.H. Cain and *S.M. Gregory, "Chain-Configurational Properties of Novolac Phenol-Formaldehyde Resins", *J. Poly. Sci.*, Poly. Chem. Ed., *16*, 659 (1978).

F.L. Tobiason, *G.H. Cain and *J.W. Anderson, "Dipole Moment Characterization of Phenol-, O-Cresol, and p-Cresol-Formaldehyde Resins", *J. Poly. Sci*, Poly. Chem. Ed., *16*, 275 (1978).

F.L. Tobiason, *The Experience of Solving Scientific and Technical Problems*, PLU Press, Third Edition, 1980.

F.L. Tobiason, "The Chain Configurational Properties of Novolak p-Cresol-Formaldehyde Resins", *J. Poly. Sci.*, Poly. Chem. Ed.,*17*, 949 (1979).

F.L. Tobiason, Editor, *Recent Developments in Science*, PLU Press, 1977. Continuing Research Support, Reichhold Chemicals, Inc.

TONN, SHERI J. (b. 1949) Assistant Professor. *Biochemistry*. B.S., 1971, Oregon State University; Ph.D., 1976, Northwestern University. Protein chemistry, fungal proteases, plant-pathogen interactions.

J.E. Gander, J. Beachy, C.J. Unkefer, S.J. Tonn, "Toward Understanding the Structure, Biosynthesis, and Function of a Membrane Bound Fungal Glycopeptide: Structural Studies", ACS Symposium Series 126, *Fungal Polysaccharides* Eds. A. Sandford and K. Matsuda, 49-79, 1980 .

S.J. Tonn and J.E. Gander, "Biosynthesis of Polysaccharides by Prokaryotes", *Ann. Rev. Microbiol.*, *33*, 69-99 (1979).

S.J. Tonn, G.E. Gogel, and P.A. Loach, "Isolation and Characterization of an Organic Solvent Soluble Polypeptide Component from Photoreceptor Complexes of *Rhodospirillum rubrum*, " *Biochemistry*, *16*, 877-85 (1977).

PHILADELPHIA COLLEGE OF TEXTILES AND SCIENCE
Philadelphia, PA 19144

Fall 1980 ug enrollment 2624
Degrees offered B.S. and B.S. Text. Eng.
Telephone (215) 951-2700

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 7 . 2. Support staff, FTE's: Sec'y 1 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 6 Grad. school 1 Industry 3 Professional schools ____ Other 2 .
4. Senior majors, average past five years: 5 .
5. Undergraduates involved in research, average past five years: Academic year 6 Summer 0.6
6. Master's program? No Master's degrees conferred, average past five years: NA
7. National honors, undergraduate or senior majors, past five years:

None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 10,000
2. Instrumentation:

IR (P-E 37)
IR (P-E 21)
Visible & UV (DB/G)
MS (HP21)
UV-emission (B&L,1.5m)
GC (Beckman 2A)
GC (HP 5750)
UV, Visible (Zeiss, Beckman DU, B&L 20, B&L 21)
Color Computer (ACS 550)

3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 101 Computer literature search service? yes Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 65. .

4. Computer facilities:

PDP-1134
TERAK Graphics Unit
PRIME 400

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

$3500/yr + travel = $3500 = $7,000.

2. Departmental grants:

NA

3. Faculty teaching loads: Contact hours 16 Load credit for research? No

4. Sabbatical or leave support for research: Every 7 years yields elegibility for one year at ½ pay or one semester at full pay.

FACULTY PROFILE

DOWDEN, EDWARD E. (b. 1939) Associate Professor and Chairman. B.S., 1963, Duke University, M.S., 196[illegible], Ph.D., 1968, University of Pennsylvania. Biochemistry

BOCK, CHARLES W. (b. 1945) Associate Professor. B.S., 1968, M.S., 1970, Ph.D., 1972, Drexel University. Theoretical Chemistry

Twenty-nine publications, 1976-80.

C.W. Bock, P. George, M. Trachtman, "An Ab Initio Study of the Structure, In-Plane Harmonic Force Field and Vibrational Frequencies of Cis- and Trans- Acrolein," J. Mol. Spectros. 78, 298 (1979)

C.W. Bock, P. George, G.J. Mains and M. Trachtman, "A Theoretical Study of the Structure of Glyoxal", J. Mol. Struct. 49 211 (1978)

P. George, M. Trachtman, A.M. Brett and C.W. Bock, "Correlation Energy Contributions to Reaction Heats," Int. J. Quantum Chem. 12, 61 (1977).

C.W. Bock, R.D. Haracz and C.M. Rosenthal," Comparison of Unitary and Pade Sums of Perturbation Series for the Scattering of a Spinless Particle from a Yukawa Potential", Phys. Rev A 13, 2028 (1976)

C.W. Bock, M. Trachtman and P. George, "An Ab Initio Study of the Geometry, Harmonic and Anharmonic Force Fields, and Fundamental Vibrational Frequencies of Cis- and Trans-Thiolformic Acid", J. Comp. Chem. 1, 167 (1980)

CELIKIZ, GULTEKIN (b. 1930) Associate Professor. B.S., 1950, Robert College, M.S., 1956, Georgia Institute of Technology. Analytical Chemistry. Color measurement and dyestuff analysis.

G. Celikiz, Infra-red and Raman Spectroscopy, vol 1 B Practical Spectroscopy Series, Marcel Dekker Inc. (1977).

GRADEL, GEORGE J. (b. 1921) Associate Professor. B.S., 1943, LaSalle College, M.S,, 1955, Drexel University. Textile Chemistry. Dyestuff chemistry, flammability.

G. Gradel, Effect of Disperse Dyes on Certain Flammability Characteristics of Polyester, Textile Chemist and Colorist, Dec. (1978).

KAPLAN, MOREY (b. 1927) Associate Professor. B.S., 1957, Philadelphia College of Textiles and Science. General and Analytical Chemistry.

NEMEROFF, NORMAN H. (b. 1936) Associate Professor. B.S., 1962, Philadelphia College of Textiles and Science, Ph.D., 1976, University of Pennsylvania. Organic Chemistry Polymer synthesis, dyestuff synthesis.

N.H. Nemeroff and M. Joullie, Photolysis of Some Heterocyclic Analogs of 3,3,5,5-Tetramethylcyclohexanone, J. Org. Chem., 43, 331 (1978)

RIVLIN, JOSEPH (b. 1934) Professor. M.Sc., 1960, Ph.D., 1965, Hebrew University. Textile and Polymer Chemistry. Flame retardant chemical finishes, polymer synthesis.

SHOEMAKER, NANCY J. (b. 1948) Assistant Professor. B.S., 1970, Cornell University, M.S., 1972, Textiles, University of Connecticut, M.S., 1975, Polymer University of Connecticut, Ph.D., 1979, Polymer and Fibre Science, University of Manchester Institute of Science and Technology, England. Textile Chemistry and Color Science.

TRACHTMAN, MENDEL (b. 1929) Professor. A.B., 1951, Temple University, M.S., 1956, Drexel University, Ph.D., 1961, University of Pennsylvania. Physical Chemistry. Photochemistry of cellulose, quenching cross-sections of aromatic compounds.

Twenty-eight publications, 1976-80.

C. Bock, M. Trachtman, and P. George "An Ab Initio Study of the Geometries, Anharmonic Force Fields and Fundamental Vibration Frequencies of Cis- and Trans-Formic Acid, J. Molec. Spect. 80, 131 (1980)

C. Bock, M. Trachtman and P. George "Contributions from Inner and Outer Shell Electron Energies to Reaction Heats for C_1,C_2 and C_3 Hydrocarbons" Int. J. of Quantum Chem. XV 423 (1979)

M. Halmann and M. Trachtman "The Photochemistry of Phosphorous Compounds Part 11 Photolysis of α-Glucose-1-phosphate J. Chem. Soc. Perkin Trans II, 132 (1977)

A.Banks, C.W. Bock, P. George, G.J. Mains and M. Trachtman, "A STO-3G Study of the Geometry and Stability of the Cross-Conjugated Polyenes 3-Methylene-1,4-Pentadiene, 3,6-Dimethylene-1,4-Cyclohexadiene, and Trimethylenecyclopropane", J. Mol. Struct. 56, 267 (1979)

P. George M. Trachtman, C.W. Bock and A.M. Brett, "The Use of 90°-1, 3-Butadiene as a Reference Structure for the Evaluation of Stabilization Energies for Bnezene and Other Conjugated Cyclic Hydrocarbons," Tetrahedron 32, 1357 (1976)

POINT LOMA COLLEGE
San Diego, CA 92106

Fall 1980 ug enrollment 1803
Degrees offered B.A.
Telephone (714) 222-6474

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 3 . 2. Support staff, FTE's: Sec'y 1 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 8 Grad. school 4 Industry 0 Professional schools 3 Other 1 .
4. Senior majors, average past five years: 7 .
5. Undergraduates involved in research, average past five years:
   Academic year 10 Summer 7
6. Master's program? N/A Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years: none

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 6,500
2. Instrumentation:

   NMR - 60 MHz(Varian T-60A)
   MS (Varian EM 600)
   UV-Vis (P-E 202)
   IR (P-E 337)
   Spinning Band Column (Nester-Faust)
   HPLC (Altex, RI and UV-Vis detect.
   GC (HP 5730A, 5750, 700; Varian A90-P)
   Low Pressure Hydrogenator (Parr 3911)
   High Pressure Monel Reactor (Parr 4751, Parr Rocker Type 4021)

3. Library resources: CA? yes Volume indices? yes Collected indices? no Total journal subscriptions? 15 Computer literature search service? yes Separate chemistry or science library? no Librarian? no Standing orders for review series and annual reviews (past five years) 5 .
4. Computer facilities: General Automation System 16-440.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Approx.$3,000/yr chemicals, glassware, and instrument repair; Approx. $2,500 overhead; Research Associates of Point Loma College (Chemistry Alumni Support Group) $9,800.
2. Departmental grants:
   NSF 69A Equipment Grant:$21,900
3. Faculty teaching loads: Contact hours 16 Load credit for research? 10%
4. Sabbatical or leave support for research: Faculty can apply for sabbatical leave at full salary for 2/3 of a year. Eligible every 7th year.

FACULTY PROFILE

CHRISTENSEN, VAL J. (b.1926) Professor and Associate Dean of the College. B.A., 1948, Bethany Nazarene College, Ph.D., 1952, University of Kansas. Inorganic Chemistry. Non-aqueous solvent systems.

V.L. Heasley, V.J. Christensen, and G.E. Heasley, Chemistry and Life in the Laboratory, Burgess, 1978.

HEASLEY, VICTOR L. (b.1937) Professor and Department Chairman. B.A., 1959, Hope College, Ph.D., 1963, University of Kansas, Organic Chemistry. Electrophilic additions to olefins, dienes, and acetylenes. Synthesis and neighboring group effects.

Sixteen publications, 1976-80.

V.L. Heasley, D.F. Shellhamer, *L.E. Heasley, *D.B. Yaeger, G.E. Heasley, Reactions of Terminal Alkynes with Iodine in Methanol, J. Org. Chem., 45, 4649(1980).

V.L. Heasley, D.F. Shellhamer, *R.K. Gipe, *H.C. Wiese, and *M.L. Oakes, Reaction of Methyl Hypochlorite with Certain Olefins in the Presence of Boron Trifluoride, Tetrahedron Lett., 4133(1980).

V.L. Heasley, *D. Spaite, D.F. Shellhamer, and G.E. Heasley, Considerations on the Effect of a Carbonyl Group on the Ring-Opening of a Neighboring Bromonium Ion, J. Org. Chem., 44, 2608 (1979).

V.L. Heasley, D.F. Shellhamer, J.A. Iskian, D. Street, and G.E. Heasley, Comparison of the Addition of Bromine Chloride to 1-Hexene and 1-Hexyne in Carbon Tetrachloride and Methanol, J. Org. Chem., 43, 3139 (1978).

V.L. Heasley, V.J. Christensen, and G.E. Heasley, Chemistry and Life in the Laboratory, Burgess, 1978.

Grants Active, 1979-80; PRF-B; $13,000.

McCONNELL, MICHAEL (b.1949) Assistant Professor biology and chemistry departments. B.A., 1971, Pasadena College, Ph.D., 1976, Tufts University School of Medicine, Molecular Biology and Microbiology. Virus-Host Cell Interactions.

Wright, A., M. McConnell, and S. Kanegasaki, Lipopolysaccharide as a bacteriophage receptor, in Virus Receptors (L. Randall and L. Phillipson, eds) Chapman and Hall, Ltd., London (1980).

McConnell, M., and A. Wright, Variation in the Structure and Phage-Inactivating Capacity of Salmonella anatum Lipopolysaccharide as a Function of Growth Temperature, J. Bact., 137, 746 (1979).

McConnell, M., A. Reznick, and A. Wright, Studies on the initial interactions of bacteriophage ε^{15} with its host cell, Salmonella anatum Virology 94; 10-23 (1979).

McConnell, M.R., P.M. Blumberg, and P.W. Rossow, The oligomeric structure of the large external transformation-sensitive protein (LETS) of chick embryo fibroblasts, J. Biol. Chem. 253; 7522-7530 (1978).

McCONNELL, MICHAEL R., cont'd

M.R. McConnell and P.M. Blumberg, Subunit Structure of Surface and Shed Large, External, Transformation - Sensitive Protein of Chick Embryo Fibroblasts, Ann. N.Y. Acad. Sci., 312, 418(1978).
Grant active, Research Corporation, 1980-81; $ 10,600.

SHELLHAMER, DALE F. (b. 1942) Associate Professor, B.A., 1969, University of California Irvine, Ph.D., 1974, University of California Santa Barbara, Organic Chemistry, Physical Organic properties of fluorocarbons. Electrophilic additions to unsaturated hydrocarbons.

Ten publications, 1976-80.

G.E. Heasley, *T.R. Bower, *W.K. Dougharty, *J.C. Easdon, V.L. Heasley, *S. Arnold, *T.L. Carter, *D.B. Yaeger, *B.T. Gipe, and D.F. Shellhamer, Electrophilic Additions to Indene and Indeone: Factors Effecting Syn Addition, J. Org. Chem., in press.

C.M. Sharts, M.E. McKee, R.F. Steed, D.F. Shellhamer, *A.C. Greeley, *R.C. Green, and *L.A. Sprague, Selective Fluorination of Dispiro [3.1.3.1]Decan-5, 10-Dione by Diethylaminosulfur trifluoride to give 10, 10-Difluorodispiro [3.1.3.1] Decan-5-one and 5,5,10, 10-Tetrafluorodispiro [3.1.3.1]Decane, J. Fluorine Chem., 14, 351 (1979).

D.F. Shellhamer and *M. Oakes, Addition of Halogens to Cyclopropylacetylene, J. Org. Chem., 43, 1316 (1978).

D.F. Shellhamer, V.L. Heasley, *J. Foster, *J.K. Luttrull, and G.E. Heasley, Addition to 2,4-Dienes, Ionic and Radical Additions to Ethyl Sorbate, J. Org. Chem., 43, 2652 (1978).

D.F. Shellhamer, D.B. McKee, and C.T. Leach, Addition of Halogens to Vinylcyclopropanes, J. Org. Chem., 41, 1972 (1976).

Grants Active, 1980-81; Res. Corp., $11,100.

POMONA COLLEGE
Claremont, CA 91711

Fall 1980 ug enrollment 1351
Degrees offered BA
Telephone (714) 621-8000 Ext. 2225

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 6 . 2. Support staff, FTE's: Sec'y 1½ Stockrm 1 Technical 1 2/3
3. 1980 seniors & their placement: Total 18 Grad. school 5 Industry 4 Professional schools 8 Other 1 .
4. Senior majors, average past five years: 13 .
5. Undergraduates involved in research, average past five years:
   Academic year 6 Summer 9
6. Master's program? Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   1977 - John Daub, NSF Graduate Fellowship.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 56,400
2. Instrumentation:

   MS (Hitachi R.M.U. - 61D)
   NMR (Varian FT-80)
   ORD-CD (Cary 60)
   UV-Vis (Gilford 2400, Cary 14 and Cary 15)
   IR (Perkin-Elmer 297 and 21)
   Stopped Flow and T-Jump System (Durrum D-115)
   Analytical Ultracentrifuge (Beckman Model E)
   Polarograph (PAR 171)
   LC (Waters 201 with Varian Variscan Detector)
   Liquid Scintillation System (Beckman LS-100C)

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 160 Computer literature search service? No Separate chemistry or science library? Yes Librarian? Yes Standing orders for review series and annual reviews (past five years) 30 .

4. Computer facilities: Department; PDP 11/10 minicomputer, 5 IBM 3278 and 2 IBM 3277 display terminals, 1 IBM 3286 and 1 IBM 3278 printers, 2 Tetronix 618 graphics terminals, 1 Tetronix 4631 hard copy unit. College; IBM 4331 computer.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: For capital equipment (for research and teaching) - $22,000.

2. Departmental grants: DuPont Grant, $7,000; California Foundation for Biochemical Research, $1,000.

3. Faculty teaching loads: Contact hours 12 Load credit for research? No .

4. Sabbatical or leave support for research: 50% salary for full year or full salary for one semester every seventh year or 50% salary for one semester every seventh year. Additional sabbatical subvention funds are available to raise salary level to about 80% salary if outside grants are not obtained.

FACULTY PROFILE

ALLEN, C. FREEMAN (b. 1928) Professor. B.S., 1948, University of California, Berkeley, Ph.D., 1952, University of Wisconsin. Organic Chemistry and Biochemistry. Lipid chemistry; biological membranes; photosynthesis; air pollution.

L. I. Rice, L. Spolter, and C. F. Allen, "Preparation and Thin Layer Chromatography of Sulfate Conjugates of the Component Oligomers of Triton X-100", J. Chromatogr. 137, 397 (1977).

Contract active 1979-80: California Air Resources Board Contract, $40,000, Air Quality Management Planning.

BEILBY, ALVIN L. (b. 1932) Professor and Chairman. B.A., 1954, San Jose State College, Ph.D., 1958, University of Washington. Analytical Chemistry. Electroanalytical chemistry, nature of carbon electrodes; environmental analysis.

G. B. Adams, A. L. Beilby, R. P. Hollandsworth, and B. D. Weber, "Rechargeable Alkaline Zinc/Ferro-Ferricyanide Hybrid Redox Battery", LMSC-D681331, Chemistry Laboratory, Material Sciences Directorate, Lockheed Palo Alto Research Laboratory, Lockheed Missiles and Space Company, Inc., January 1980.

A. L. Beilby, editor, "Modern Classics in Analytical Chemistry", Volume II, American Chemical Society, Washington, D. C., 1976.

HANSCH, CORWIN (b. 1918) Professor. B.S., 1940, University of Illinois, Ph.D., 1944, New York University. Organic Chemistry and Medicinal Chemistry. Correlation of chemical structure and biological activity.

43 publications, 1976-1980.

C. Hansch, "The Use of Alternatives in Drug Research", in "Computer-assisted Enzyme Studies in Drug Design", A. N. Rowan and C. J. Stratman, eds., MacMillan Press, London, 1980, pp. 1-15.

C. Hansch, *B. H. Venger, and A. Panthananickal, "Mutagenicity of Substituted (o-Phenylenediamine) Platinum Dichlorides in the Ames Test. A Quantitative Structure-Activity Analysis", J. Med. Chem. 23, 439 (1980).

*J. M. Blaney, S. W. Dietrich, *M. A. Reynolds, and C. Hansch, "Quantitative Structure-Activity Relationship of 5-(X-Benzyl)-2,4-diaminopyrimidines Inhibiting Bovine Liver Dihydrofolate Reductase", J. Med. Chem. 22, 614 (1979).

C. Hansch and A. Leo, "Substituent Constants for Correlation Analysis in Chemistry and Biology", Wiley-Interscience, New York, 1979.

*B. H. Venger, C. Hansch, G. J. Hatheway, and Y. U. Amrein, "Ames Test of 1-(X-Phenyl)-3,3-dialkyltriazenes. A Quantitative Structure-Activity Study", J. Med. Chem. 22, 473 (1979).

Grants and Contracts active 1979-80: National Cancer Institute Grant, $151,167, Drug Design and Development of Antitumor Drugs; National Cancer Institute Contract, $51,200, Structure-Activity Relationships of Antitumor Drugs; Chevron Research Grant $10,000, Isolation of Insect Dihydrofolate Reductase.

PANASENKO, SHARON M. (b. 1950) Assistant Professor. A.B., 1972, University of California, Berkeley; Ph.D., 1977, Stanford University. Biochemistry. Transmembrane Signalling during Chemotaxis and Development.

PANASENKO, SHARON M., cont'd

S. Clarke, K. Sparrow, S. M. Panasenko, D. E. Koshland, Jr., "In Vitro Methylation of Bacterial Chemotaxis Proteins: Characterization of Protein Methyltransferase Activity in Crude Extracts of S. typhimurium", J. Supramolecular Structure, in press (1980).

S. M. Panasenko and D. E. Koshland, Jr., "Methylation and Demethylation in the Bacterial Chemotactic System", J. Supramolecular Structure 10, 273 (1979).

S. M. Panasenko, R. J. Alazard, and I. R. Lehman, "A Simple Three-Step Procedure for the Large Scale Purification of DNA Ligase from a Hybrid Lambda Lysogen Constructed In Vitro", J. Biol. Chem. 253, 4590 (1978).

S. M. Panasenko, J. R. Cameron, R. W. Davis, and I. R. Lehman, "Five Hundred-Fold Overproduction of DNA Ligase after Induction of a Hybrid Lambda Lysogen Constructed In Vitro", Science 196, 188 (1977).

S. M. Panasenko, P. Modrich, and I. R. Lehman, "Modification of Escherichia coli DNA Ligase by Cleavage with Trypsin", J. Biol. Chem. 251, 3432 (1976).

Grant active 1979-80: Research Corporation, $7,500, Transmission of Signals Across Biological Membranes: Bacterial Chemotaxis, a Model System.

SMITH, R. NELSON (b. 1916) Professor. B.A., 1938, Pomona College, Ph.D., 1942, Stanford University. Physical Chemistry. Hydrophobic Interaction of small molecules with macromolecules.

8 publications 1976-80.

R. N. Smith and C. Pierce, "Solving General Chemistry Problems", 5th edition, W. H. Freeman Company, San Francisco, 1980.

S. W. Dietrich, R. N. Smith, J. Y. Fukunaga, *M. Olney, and C. Hansch, "Dihydrofolate Reductase Inhibition by 2,4-Diaminotriazines. A Structure-Activity Study", Arch. Biochem. Biophys. 194, 600 (1979).

S. W. Dietrich, R. N. Smith, *S. J. Brendler, and C. Hansch, "The Use of Triazine Inhibitors in Mapping the Active Site Region of L. Casei Dehydrofolate Reductase", Arch. Biochem. Biophys. 194, 612 (1979).

R. N. Smith and *S. Hollenberg, "Lack of Confirmation for Conformational Changes in Papain Caused by Ligand Binding", Physiol. Chem. Physics 10, 557 (1978).

C. Hansch, R. N. Smith, *A. Rockoff, *D. F. Calef, P. Y. C. Jow, and J. Y. Fukunaga, "Structure-Activity Relationships in Papain and Bromelain Ligand Interactions", Arch. Biochem. Biophys. 183, 383 (1977).

Grant active 1979-80: Research Corporation Grant, $3,100, Investigation of Papain-Substrate and Papain-Inhibitor Interactions.

STEINMETZ, WAYNE E. (b. 1945) Associate Professor. A.B., 1967, Oberlin College, A.M., 1968, Ph.D., 1973, Harvard University. Physical Chemistry and Molecular Spectroscopy. Molecular structure and spectroscopy; conformational analysis of proteins using nuclear magnetic resonance and circular dichroism spectroscopy.

*J. B. Siegel, W. E. Steinmetz, and G. L. Long, "A Computer-Assisted Model for Predicting Proton Secondary Structure from Circular Dichroic Spectra: Comparison of Animal Lactate Dehydrogenases", Anal. Biochem. 104, 160 (1980).

W. E. Steinmetz, *J. E. Pollard, *J. M. Blaney, *B. K. Winker, "I. K. Mun, *F. J. Hickernell, and *S. J. Hollenberg, "Conformational Analysis of Conjugated Polymers by Nuclear Magnetic Resonance and Low Resolution Microwave Spectroscopy", J. Phys. Chem. 83, 1540 (1979).

W. E. Steinmetz, *J. Hollenberg, *F. J. Hickernell, *C. E. Orr, and L. H. Scharpen, "The Conformational Analysis of Substituted Alkenes by Low Resolution

STEINMETZ, WAYNE E., cont'd

Microwave Spectroscopy", J. Phys. Chem. 82, 940 (1978).

W. E. Steinmetz, *F. Hickernell, *I. K. Mun, and L. H. Scharpen, "The Conformational Analysis of 1-Haloalkanes by Low Resolution Microwave Spectroscopy", J. Mol. Spectrosc. 68, 173 (1977).

PRINCIPIA COLLEGE

Elsah, IL 62028

Fall 1980 ug enrollment 932

Degrees offered BS, BA

Telephone (618) 374-2131

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 2.5. 2. Support staff, FTE's: Sec'y 0.4 Stockrm 0 Technical 0.5
3. 1980 seniors & their placement: Total 1 Grad. school ____ Industry ____ Professional schools ____ Other 1.
4. Senior majors, average past five years: 3.
5. Undergraduates involved in research, average past five years: Academic year 5 Summer 2
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 3900
2. Instrumentation:

   NMR (P-E R24B)
   AA (Varian 1200)
   IR (P-E 337)
   UV-Vis (Beckman DB-G)
   Polarized Reflection Microspectrophotometer
   G C's (P-E Sigma One; Wilkens)
   X-Ray Diffraction: Phillips Generator; Powder Cameras and 2-single-crystal cameras

3. Library resources: CA? yes Volume indices? yes Collected indices? no Total journal subscriptions? 74 Computer literature search service? yes Separate chemistry or science library? no Librarian? No Standing orders for review series and annual reviews (past five years) 4.

4. Computer facilities: Department: Tektronix 4006 graphics terminal, Versatec 1200 hard-copy unit and line printer, Tektronix 4662 plotter, CRT, TI 763. Campus: HP-3000 II time sharing computer; several CRT's.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: About $1500/yr for chemicals, equipment, travel.

2. Departmental grants: None

3. Faculty teaching loads: Contact hours 15 Load credit for research? no

4. Sabbatical or leave support for research: Full salary for 1 quarter, half salary for 1 year, every 4-7 years.

FACULTY PROFILE

CHA, JIN-KUN (b. 1953) Visiting Assistant Professor. B.S., 1975, Seoul National University, D. Phil., 1980, University of Oxford. Organic Chemistry. Synthetic methods and total synthesis of complex natural products.

J.E. Baldwin, L.I. Kruse and J.-K. Cha, "Total Synthesis of AT-125," J. Amer. Chem. Soc., accepted for publication.

ERWIN, RANDALL D. (b. 1954) Instructor in Chemistry. B.S., 1978, Principia College. Analytical Chemistry. Coatings and dispersions; environmental water quality.

MUSSELMAN, RONALD L. (b. 1942) Associate Professor and Chairman. B.S., 1964, California State University, Fresno; M.S., 1968, University of California, Davis; Ph.D., 1971, New Mexico State University. Inorganic and Physical Chemistry. Polarized single-crystal specular reflectance spectroscopy; relationship of crystal structure to cooperative electronic effects in one-dimensional inorganic conductors and related systems; determination of electrical conductivity via optical methods; bridged isocyanide rhodium complexes; graphics in computer-assisted instruction.

R.L. Musselman, *J.B. Cornelius, and *R.M. Trapp, Jr., "Single-Crystal Polarized Specular Reflectance Spectra of $BaNi(CN)_4 \cdot 4H_2O$: A One-dimensional Solid-State Effect," Inorg. Chem., in press.

R.L. Musselman, *L.C. Stecher, and S.F. Watkins, "Crystal Structure and Spectra of Cesium Potassium Tetracyanonickelate (2-)," Inorg. Chem., 19, 3400 (1980).

B.G. Anex and R.L. Musselman, "Solid-State Interactions in $BaPt(CN)_4 \cdot 4H_2O$ and Related d^8 Complexes. A Mixed-Crystal Study," J. Phys. Chem., 84, 883 (1980).

P.L. Johnston, R.L. Musselman, and J.M. Williams, "Structural Studies of Precurser and Partially Oxidized Conducting Complexes. X. A Neutron Diffraction Study of Potassium Sodium Tetracyanoplatinate (II) Trihydrate, $KNaPt(CN)_4 \cdot 3H_2O$," Acta Cryst. B33, 3155 (1977).

R.L. Musselman and J.M. Williams, "Polarized Specular Reflectance of the New One-dimensional 'Metals' $K_{1.75}$ $[Pt(CN)_4] \cdot 1.5\ H_2O$, $Rb_{1.75}$ $[Pt(CN)_4] \cdot 1.5\ H_2O$, and $Cs_{1.75}$ $[Pt(CN)_4] \cdot 1.5\ H_2O$," J. Chem. Soc. Chem. Commun., 1977, 186.

Grant active 1979-1981: Research Corporation Cottrell College Science Grant, "Single-Crystal Polarized Specular Reflectance Spectroscopy of Tetracyanonickelates: An Investigation of Solid-State Effects and Their Dependence upon Crystal Structure," $15,750.

UNIVERSITY OF PUGET SOUND
Tacoma, WA 98416

Fall 1980 ug enrollment 2650
Degrees offered BA, BS, MS
Telephone (206) 756-3123

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 7. 2. Support staff, FTE's: Sec'y 1 Stockrm 1 Technical 1
3. 1980 seniors & their placement: Total 22 Grad. school 6 Industry 15 Professional schools 1 Other 0.
4. Senior majors, average past five years: 17.
5. Undergraduates involved in research, average past five years:
   Academic year 10 Summer 5
6. Master's program? yes Master's degrees conferred, average past five years: <1
7. National honors, undergraduate or senior majors, past five years:
   NSF Fellowship - Joyce Tomashiro, 1979
   Rhodes Scholar - Bradley Sieverts, 1977

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 35,000
2. Instrumentation:
   - NMR (T-60)
   - Mass Spec (CEC 121)
   - GC (Pye 104, HP 5750)
   - IR (Beckman IR-20)
   - UV-VIS (Cary 11, Beckman DK-2, Beckman 35)
   - LC (Waters)
   - Fluorescence Spectrophotometer (Turner)
   - AA (Jarrell-Ash, Southern Analytical A3000)
   - X-ray Fluorescence (Norelco)
   - X-ray Diffraction (Norelco)
3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 40 Computer literature search service? No Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 16.
4. Computer facilities: Department: Ohio Sci 6502, PET, SWTPC 6809, two terminals. Campus: DEC 11/70, 6 terminals in science building.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   Approximately \$2,000/yr. chemicals and equipment: \$800/yr. travel, \$3,000/yr. equipment.
2. Departmental grants:
   Northwest Area Foundation, \$2,000.
3. Faculty teaching loads: Contact hours 15 Load credit for research? none.
4. Sabbatical or leave support for research: 50% salary for full year, 100% salary for 1/2 year, faculty qualify after six years of service. Leaves of absence granted on request.

FACULTY PROFILE

BERRY, KEITH O. (b. 1938) Professor and Chairman. B.S., 1960, N. Colorado Univ., Ph.D., 1966, Iowa State Univ., Inorganic Chemistry. Coordination chemistry of constrained ring ligands, complexes of transition metals with mixed halide ligands, a novel synthesis of amphetamine.

BLAND, JEFFREY S. (b. 1944) Assoc. Professor., B.S. 1967, Univ. of California, Irvine, Ph.D., 1971, Univ. of Oregon. Organic Chemistry. Role of biological antioxidants in retardation of lipid peroxidation, relationship between hair trace mineral levels and blood chemical parameters. 30 publications since 1969.

J.S. Bland, Biochemical Consequences of Lipid Peroxidation, J. Chem. Educ. 55, 151(1978).

J.S. Gland, Biochemical Effects of Excited State Oxygen, J. Chem. Educ. 53, 2902(1976).

DASHER, WILLIAM. (b. 1948). Assist. Professor, B.S. 1975, Western Wash. Univ., Ph.D. 1980, Univ. of Washington. Organic Chemistry. Synthesis of biomimetic molecules, particularly alosedrol.

MEHLHAFF, L. CURTIS (b. 1940) Assoc. Professor. B.S., 1961, Univ. of California, Berkeley, Ph.D. 1965, Univ. of Washington. Analytical Chemistry and Polymer Chemistry. Chemistry of polymer systems, solid waste disposal.

ROUSSLANG, KENNETH (b. 1948). Assist. Professor, B.S. 1970, Portland State Univ., Ph.D. 1976, Univ. of Washington. Physical Chemistry. Phosphorescence, fluorescence and optical detection of magnetic resonance (OMDR) in biological systems, energy transfer involving excited states. 15 publications since 1976.

K.W. Rousslang, A.L. Kwiram, Triplet-triplet Energy Transfer in the Tryptophyl-Tyrosinate Dipeptide, Chem. Phys. Lett. 39, 231(1976).

K.W. Rousslang, J.B.A. Ross, A.L. Kwiram and D.A. Ceranleau, Biochemistry 17, 1087(1978).

ROWLAND, THOMAS V. (b. 1946). Assoc. Professor, B.S. 1968, The Catholic Univ. of America, Ph.D., 1975, Univ. of California, Berkeley. Inorganic Chemistry. Aqueous solution transition metal complexes. Magnetic resonance techniques.

WOOD, ANNE (b. 1943) Assoc. Professor. B.S. 1966, Univ. of Illinois, Ph.D. 1970, Univ. of Illinois. Biochemistry. Enzyme degredation reactions.

UNIVERSITY OF REDLANDS

Redlands, CA 92373

Fall 1980 ug enrollment 1131

Degrees offered B.A., B.S.

Telephone (714) 793-2121

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 4 . 2. Support staff, FTE's: Sec'y 0.3 Stockrm 0.5 Technical 0.5
3. 1980 seniors & their placement: Total 3 Grad. school 1 Industry 0 Professional schools 0 Other 2 .
4. Senior majors, average past five years: 5 .
5. Undergraduates involved in research, average past five years: Academic year 5 Summer 6
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years: None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 14,000
2. Instrumentation:

NMR-Varian, Model T-60
IR-Beckman IR-12 & Acculab 2
UV-Vis-Cary 14, Hitachi 100-80
MS-Varian, Model EM-600
Analytical Ultracentrifuge - Spinco Model E
Amino acid Analyzer - Spinco Model 118

Automatic titrator-Radiometer
Polarimeter - PE - Model 241
HPLC-Altex Model 330
Calorimeter-Tronac Model 450

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 23 Computer literature search service? No Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 5 .

4. Computer facilities: Terminal access to HP-2000. Campus: IBM-1130

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Approx. $4,000/yr. chemicals, glassware, equipment, etc. $6,000/yr. for chemistry library support.

2. Departmental grants:
Stauffer Charitable Trust, $50,000 for equipment for 1979-80.

3. Faculty teaching loads: Contact hours 12/wk. Load credit for research? Occasional

4. Sabbatical or leave support for research: Faculty can apply for sabbatical leave at 50% salary full year, full salary for ½ year. Frequency averages every 7th year.

FACULTY PROFILE

DIETRICH, STEPHEN W. (b. 1950) Assistant Professor. B.A., 1972, Pomona College, Ph.D., 1976, University of California at San Francisco. Medicinal and Organic Chemistry. Quantitative structure-activity relationships and drug design; design/synthesis of enzyme inhibitors as potential drugs.

Thirteen publications, 1976-1980.

S. W. Dietrich, R. N. Smith, J. Y. Fukunaga, *M. Olney, and C. Hansch, "Dihydrofolate Reductase Inhibition by 2,4-Diaminotriazines: A Structure-Activity Study", Arch. Biochem. Biophys., 194, 600 (1979).

S. W. Dietrich, R. N. Smith, *S. Brendler, and C. Hansch, "The Use of Triazine Inhibitors in Mapping the Active Site Region of Lactobacillus casei Dihydrofolate Reductase", Arch. Biochem. Biophys., 194, 612 (1979).

*J. M. Blaney, S. W. Dietrich, *M. A. Reynolds, and C. Hansch, "Quantitative Structure-Activity Relationship of 5-(X-Benzyl)-2,4-diaminopyrimidines Inhibiting Bovine Liver Dihydrofolate Reductase", J. Med. Chem., 22, 614 (1979).

S. W. Dietrich, *J. M. Blaney, *M. A. Reynolds, P.Y.C. Jow, and C. Hansch, "Quantitative Structure-Selectivity Relationships. Comparison of the Inhibition of Escherichia coli and Bovine Liver Dihydrofolate Reductase by 5-(Substituted-Benzyl)-2,4-diaminopyrimidines", J. Med. Chem., 23, 1205 (1980).

K. H. Kim, S. W. Dietrich, C. Hansch, B. J. Dolnick, and J. R. Bertino, "Inhibition of Dihydrofolate Reductase. 3. 4,6-Diamino-1,2-dihydro-2,2-dimethyl-1-(2-Substituted-pheny)-s-triazine Inhibition of Bovine Liver and Mouse Tumor Enzymes", J. Med. Chem., 23, 1248 (1980).

HOLLENBERG, J. LELAND (b. 1926) Professor. B.A., 1949, B.S., 1952, University of Redlands, M.S., 1952, University of California, Berkeley, Ph.D., 1962, University of Southern California. Physical Chemistry. Absolute infrared intensities in condensed phase. Hydration numbers of biochemicals. Department Chairman, 1980-81.

*G. W. Hart and J. L. Hollenberg, "Absolute Infrared Intensities of ClO_3^- and SCN^-", Spectrochimica Acta, 34A, 367 (1978).

J. Kumamoto, J. G. Waines, J. L. Hollenberg, and R. W. Scora, "Identification of Major Monoterpenes in the Leaf Oil of Gossypium", J. Agric. Food Chem., 27, 203 (1979).

J. L. Hollenberg, "Determination of Hydration Numbers by Near Infrared", J. Chem. Educ., 56, 278 (1979).

IFFT, JAMES B. (b. 1935) Professor. B.S., 1957, Pennsylvania State University, Ph.D., 1962, California Institute of Technology. Biophysical Chemistry. Density gradient centrifugation; hydration studies; partial specific volumes.

Fifteen publications, 1976-80.

*Dan S. Sharp and James B. Ifft, "Density Gradient Proportionality Constants, Density Distributions, and Pressure Effects for Three Salt Solutions", Biopolymers, 18, 3043-3065 (1979).

Torben G. Pedersen, Stephen Bayne, James B. Ifft, and Martin Ottesen, "Buoyant Densities of Dissolved and Crystalline Lactate Dehydrogenase from Pig Heart and Pig Muscle", Carlsberg Research Communications, 43, 491-495 (1978).

Torben G. Pedersen and James B. Ifft, "Buoyant Titration of Ovalbumin in Four Alkali Halides. Hydration and Ion Binding", Carlsberg Research Communications, 43, 65-76 (1978).

IFFT, JAMES B., cont'd

*Dan S. Sharp, *Norman Fujita, Kathleen Kinzie and James B. Ifft, "Compressibility Studies of Three Proteins in CsCl Solutions in the Analytical Ultracentrifuge", Biopolymers, 17, 817-836 (1978).

*Dan S. Sharp and James B. Ifft, "An Improved Method of Computation of Density Distributions", Biopolymers, 16, 1153-1158 (1977).

N.I.H. Grant: "Physical Chemistry of Proteins in Salt Solutions", $36,000 for 4/80 to 3/81.

ROBERTS, JR., JULIAN L. (b. 1935) Professor. A.B., 1957, University of Southern California, Ph.D., 1962, Northwestern University. Analytical Chemistry. Electrochemistry of dioxygen and hydrogen peroxide in aprotic solvents.

J. L. Roberts, Jr., and J. B. Ifft, Frantz/Malm's Chemical Principles in the Laboratory, 2nd ed., W. H. Freeman and Co., San Francisco (1977).

J. L. Roberts, Jr., M. M. Morrison, and D. T. Sawyer, "Base-Induced Generation of Superoxide Ion and Hydroxyl Radical from Hydrogen Peroxide", J. Am. Chem. Soc., 100, 329 (1978).

Mark M. Morrison, J. L. Roberts, Jr., and D. T. Sawyer, "Oxidation-Reduction Chemistry of Hydrogen Peroxide in Aprotic and Aqueous Solutions", Inorg. Chem., 18, 1971 (1979).

J. B. Ifft and J. L. Roberts, Jr., Frantz/Malm's Chemistry in the Laboratory, W. H. Freeman and Co., San Francisco (1981).

REED COLLEGE
Portland, OR 97202

Fall 1980 ug enrollment 1126
Degrees offered B.A.
Telephone 503-771-1112

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5.25 2. Support staff, FTE's: Sec'y 1.0 Stockrm 1.0 Technical 0.0
3. 1980 seniors & their placement: Total 14 Grad. school 4 Industry 5 Professional schools 2 Other 3.
4. Senior majors, average past five years: 16.
5. Undergraduates involved in research, average past five years:
   Academic year 19 Summer 20, est.
6. Master's program? No Master's degrees conferred, average past five years: n/a
7. National honors, undergraduate or senior majors, past five years:
   1975-76: David Jaffer (NSF, Fulbright, Churchill); 1976-77: Gregory Karczmar (NIH); 1977-78: Rachel Klevit (Rhodes).

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 20,180
2. Instrumentation: AA (Instrumentation Laboratories #151 spectrometer and Model 555 Flameless Atomizer; Multi-channel analyzer (radiochem); GC (Varian Models 1800, 2400, Autoprep); Hydrogenators (medium and high pressure); IR (Perkin-Elmer Model 599); NMR (P-E/Hitachi Model R-20B); Nuclear Reactor (Gulf General Atomic, Mark I); Stopped flow apparatus (Durrum SF spectrophotometer/fluorimeter); UV-Vis (Perkin-Elmer/Hitachi Model 200); Controlled Atmosphere Drybox (Kewaunee Model 2C402-28R with accessories) Thro'
3. Library resources: CA? Yes Volume indices? Yes Collected indices? 9CI Total journal subscriptions? 57 Computer literature search service? note Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 18.
   Note: beginning Jan 1981
4. Computer facilities:
   DEC PDP 11/35 computer with real time data acquisition equipment; EAI Model TR20 analog computer; (access to Reed's) DEC PDP 11/70 computer via terminals in the Chemistry Building.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: total student wages budget, $15,500 (for all student assisting).
2. Departmental grants: DuPont $6500; NSF-URP $11,320; NSF-ISEP $40,283; Dreyfuss $8,000
3. Faculty teaching loads: Contact hours 14.4* Load credit for research? nil
   *plus theses and independents
4. Sabbatical or leave support for research: Released time, NSF/CAUSE grant; one can apply for sabbatical leave (1 semester at full pay or 1 yr. at half pay) at tenure and every 7th year thereafter.

FACULTY PROFILE

BETTEGA, Richard J. (b. 1948) Visiting Assistant Professor of Chemistry. B.A., 1970, Sonoma State University; B.S., 1972, Sonoma State University; Ph.D., 1978, University of Oregon. Physical Chemistry. Theoretical and experimental investigation of Rydberg series; vacuum ultraviolet spectroscopy.

CRONYN, Marshall W. (b. 1919) Professor of Chemistry. B.A., 1940, Reed College; Ph.D., 1944, University of Michigan. Organic Chemistry. Chemistry of lignin; synthesis of sulfur and fluorine containing organic structures; problems in chemotherapy; studies in the use of catalytic dehydrogenation to supply hydrogen for automotive use.

E. H. Mørkved and M. W. Cronyn, "Synthesis of Some Substituted Picolinimidoyl Chloride Hydrochlorides", Acta Chemica Scandinavica, B, 32, 231 (1978).

E. H. Mørkved and M. W. Cronyn, "Synthesis of Some Derivatives of 4-Dialkyl-amino-2-aminopyridine", Journal f. Prakt. Chemie, 322, 343-347 (1980).

DUNNE, Thomas G. (b. 1930) Associate Professor of Chemistry. B.S., 1952, University of California/Los Angeles; Ph.D., 1957, University of Washington. Inorganic Chemistry. Studies of electron transfer mechanisms in solution.

T. G. Dunne and J. K. Hurst, "Kinetic and Thermodynamic Properties of Chromium(III) Complexes Containing Pyrazine Radical Ligands", Inorganic Chem., 19, 1152-1157 (1980).

HANCOCK, John E. H. (b. 1929) Professor of Chemistry and Chairman. B.Sc., 1950, University of London; Ph.D., 1952, Imperial College of Science and Technology. Organic Chemistry. Chemistry of azides; routes to dodecahedrane; electrochemical syntheses; the literature of organic chemistry.

*N.G. Galakatos, J.E.H. Hancock, *O.M. Morgan, *M.R. Roberts, and *J.K. Wallace, "On the Use of Ceric Salts as Coupling Agents; Part 1", Synthesis, 472 (1978).

KAY, Michael A. (b. 1943) Associate Professor and Director of Nuclear Reactor Facility. B.S., 1965, University of California/Berkeley, Sc.D., 1970, Massachusetts Institute of Technology. Analytical and Radiochemistry. Trace element analysis as applied to biomedical problems and environmental problems.

Luckey, T., Hartman, R., Kay, M., and Hutchison, D., "Alimentary Kinetics of Pigs Fed Three Meals Daily", Nutr. Repts. Int., 19:2, 135 (1979).

KAY, MICHAEL A., cont'd

Anderson, H., Movius, J., Kay, M. and Moore, D., "The Analysis of Peritoneal Dialysis Fluids - From Psoriatic Patients - By Neutron Activation Analysis" in "Trace Substances in Environmental Health - VIII", D. W. Hemphill, ed., University of Missouri Press, 1979.

Kay, M., Hutchison, D., Vales, J., Hartman, R., Goeckler, W., and Luckey, T., "Fate of Rare Earth Oxide Dietary Markers in Rats and Pigs", Nutr. Repts. Int., 21:3, 323 (1980).

Kay, M., "In Situ Determination of Transuranic and Fission Product Radionuclides", FHO-SA-156, Rockwell Hanford Operations, Richland, WA, in "Proc. 4th Int. Conf. in Nuclear Methods in Environmental and Energy Research", J. R. Vogt, ed., University of Missouri, Columbia, MO (1980).

Riggs, C., Kay, M., Troutner, D., "^{123m}Te as a Calibration Standard for ^{123}I", J. Radioanalytical Chem. accepted, in press.

Grants active: $12,000, U.S.D.O.E. to Nuclear Science Consortium of the Northwest; approx. $15,000 from various sources in support of reactor operation and neutron activation analysis.

WEIR, William D. (b. 1941) Associate Professor of Chemistry. A.B., 1962, Occidental College; A.M., 1964 and Ph.D., 1965, Princeton University. Physical Chemistry. Theoretical and experimental studies of the dynamics of chemical and electrochemical reactions; investigations of transport; applications of computer technology to simulation of dynamic systems and to chemical instrumentation.

On leave 1980-82.

UNIVERSITY OF RICHMOND
Richmond, VA 23173

Fall 1980 ug enrollment 2525
Degrees offered B.S., M.S.
Telephone (804) 285-6381

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 8½. 2. Support staff, FTE's: Sec'y 1 Stockrm ¼ Technical 2
3. 1980 seniors & their placement: Total 22 Grad. school 5 Industry 6 Professional schools 6 Other 5.
4. Senior majors, average past five years: 21.
5. Undergraduates involved in research, average past five years:
   Academic year 10 Summer 2
6. Master's program? yes Master's degrees conferred, average past five years: 1
7. National honors, undergraduate or senior majors, past five years:

   None.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 35,000
2. Instrumentation:

UV-Vis (Beckman Acta CIII, P-E 450)	GC (Fand M-810)
NMR (P-E R24A)	IR (P-E 621)
MS (Varian EM600)	Fluorometer (Aminco-Bowman J48990)
AA (Jarrell-Ash 82-500, P-E 303)	Ultracentrifuge (Beckman L8-55)

3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 115 Computer literature search service? yes Separate chemistry or science library? yes Librarian? yes Standing orders for review series and annual reviews (past five years) 20.

4. Computer facilities: 15 terminals (9 in science center) w/access to a Hewlett-Packard 2000 Access Computer at the U. of VA. A control Data 200UT remote batch terminal w/access to a Cyber 172 Computer at the U. of VA. Microcomputer, Polymorphic, Model 8813.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   $3,500 for chemicals and apparatus, $3,500 for equipment and $1,200 for travel expenses.
2. Departmental grants:

   NSF $20,759.

3. Faculty teaching loads: Contact hours 12 Load credit for research? occasional

4. Sabbatical or leave support for research: Faculty can apply for sabbatical leave at 50% salary full year, full salary for ½ year. Frequency every 7th year.

FACULTY PROFILE

BALDWIN-BOISCLAIR, SHERYL (b. 1948) Assistant Professor. B.S. 1975, Virginia Commonwealth University, Ph.D. 1979, Virginia Commonwealth University. Analytical and Physical Chemistry. Physical chemistry of macromolecules, metal ion binding by polyanions, structure activity relationships of psychoactive drugs.

S. Baldwin, D.D. Shillady, L.B. Kier, "Approximate Molecular Potentials of Phenethylamines", Molecular Pharmacology, 18, 455 (1980)

S. Baldwin, D.D. Shillady, "Dipole Optimized Gaussian Orbitals for Rapid Computation of Electrostatic Molecular Potential Contour Maps", International Journal of Quantum Chemistry, QBS6, 108 (1979)

S. Baldwin, D.D. Shillady, An Improved CNDO/S Calculation of the Optical Activity of 1-Methylindan, Chemical Physics Letters, 58(3), 405 (1978)

BELL, ROBERT H. (b. 1928) Instructor. B.A. 1949, Virginia Polytechnic Institute and State University, B.S. in Pharmacy 1956, Virginia Commonwealth University, Graduate study in Pharmaceutical Chemistry 1958-61, Virginia Commonwealth University. Inorganic Chemistry.

CHASE, CAROL ROANE (b. 1952) Part-time Instructor. B.S. 1974, North Carolina Wesleyan College, M.A. 1976, College of William and Mary. Organic Chemistry.

CLOUGH, STUART C. (b. 1943) Assistant Professor. B.S. 1965, University of Richmond, Ph.D. 1969, University of Florida. Organic Chemistry. Synthesis, mechanism, aziridine chemistry, photochemistry of cyclobutendione.

GILLESPIE, JESSE SAMUEL, JR., (b. 1921) Professor. B.S. 1943,Virginia Military Institute, Ph. D. 1949, University of Virginia. Organic Chemistry. Medicinal chemistry, aromatic and heterocyclic systems.

J.S. Gillespie Jr., and D.A. Shamblee, Antimalarials 4. Trichloronapthalene Amino Alcohols, Journal of Medicinal Chemistry, vol. 22, p. 86, (1979)

MATEER, RICHARD A. (b. 1940) Associate Professor. B.A. 1962, Centre College, Ph.D. 1966, Tulane University. Organic Chemistry.

MYERS, WILLIAM H. (b. 1946) Assistant Professor. B.S. 1967, Houston Baptist College; Ph.D. 1972, University of Florida. Inorganic Chemistry. Halogenation of hindered aromatic amine boranes, characterization of trigonal boronium cations, elucidation of reaction of thiocyanate ion with amine-iodoborane adducts.

W.H. Myers, Instructor's Manual for Chemistry: A Systematic Approach, Oxford University Press, New York, 1980

W.H. Myers, and W.T. Mooney, Jr., Student Guide for Chemistry: A Systematic Approach, Oxford University, Press, New York, 1980

W.H. Myers and G.E. Ryschkewitsch, Exchange of Deuterium for Hydrogen during the Reaction of Dimethylamine-N-d-Borane with Halogenating Agents. Inorganic Chemistry, 17, 1157 (1978)

MYERS, WILLIAM H., cont'd

Grant active in 1980; University of Richmond Summer Research Fellowship, $1500; University of Richmond Research Grant, $1400.

POWELL, W. ALLAN (b. 1921) Professor. Chairman, Department of Chemistry. B.S. 1942, Wake Forest University; Ph. D. 1953 Duke University. Analytical Chemistry. Instrumental methods, chemical nature of jellyfish toxin.

TOPHAM, RICHARD A. (b. 1943) Associate Professor. B.S. 1965, Hampden-Sydney College; Ph.D. 1969 Cornell University. Biochemistry. Mechanism of iron metabolism.

R.W. Topham, *J.H. Woodruff, *G.P. Neatrour, M.P. Calisch, *R.B. Russo, and *M.R. Jackson, The Role of Ferroxidase-II and a Ferroxicase Inhibitor in Iron Mobilization from Tissue Stores, Biochemical and Biophysical Research Communications,. 96, 1532 (1980)

M.E. Powanda, R.H. Kenyn, R.W. Topham, R.E. Whitmire and E.C. Hauer, Alternations in Trace Metals, Proteins, and Lipids During Rocky Moutain Spotted Fever in Guinea Pigs, Nutrition Reports International, 18, 57, (1978)

*J.L. Chin, *M.P. Calisch, and R.W. Topham, Purification and Characterization of the Ferroxidase-II from Rabbit (Oryctolagus Cuniculus) Serum. International Journal of Biochemistry, 9, 775 (1978)

*L.F. Lykins, *C.A. Akey, *E.G. Christian, *G.E. Duval, and R.W. Topham, Dissociation and Reconstitution of Human Ferroxidase-II, Biochemistry, 16, 693 (1977)

Grants active in 1980: National Institutes of Health, three year grant, $195,000; National Institutes of Health, one year grant $85,370; University of Richmond, $1000.

WORSHAM, JAMES E. (b. 1925) Professor. B.S. 1947, University of Richmond; M.S., 1949 Vanderbilt University; Ph.D., 1953, Duke University. Physical Chemistry. Methods and instruments for the study of the delivery of oxygen to tissue.

RIDER COLLEGE

Lawrenceville, N. J. 08648

Fall 1980 ug enrollment 3607

Degrees offered B.S.

Telephone 609-896-5094

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5 . 2. Support staff, FTE's: Sec'y 1 Stockrm 0.5 Technical .25
3. 1980 seniors & their placement: Total 5 Grad. school 2 Industry 3 Professional schools N/A Other N/A .
4. Senior majors, average past five years: 6 .
5. Undergraduates involved in research, average past five years:
   Academic year 4 Summer 3
6. Master's program? N/A Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 15,000
2. Instrumentation:

I.R. (P.E. 237B, P.E. 457)	M.S. (Varian E.M. 600)
NMR (P.E. R-20A)	G.C. (F & M 810, 850 prepomatic)
U.V. (Cary 15, Zeiss PMQII)	Polarograph (Sargent XIV)
AA (PE 303)	X-Ray (Diffraction, Powder & Single Crystal Scint. Counter (Isocap/300)

3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 39 Computer literature search service? no Separate chemistry or science library? no Librarian? no Standing orders for review series and annual reviews (past five years) 8 .

4. Computer facilities: College Computer is PDP-10, 256K User Core memory. Teletype linkage to Science Hall. 3 terminals.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   About $3,000/yr for chemicals, senior research and travel expense

2. Departmental grants:
   FMC Grant - $2,000
   NSF Pre-College Teaching Grant 1976-1980 $14,000/yr.

3. Faculty teaching loads: Contact hours 10-12 Load credit for research? no

4. Sabbatical or leave support for research: Full Salary for one-half year Half salary for full year-eligible after seven years.

FACULTY PROFILE

BEACH, RICHARD L. (b. 1933) Professor and Chairman. B.S. 1955 1955 Muhlenberg College, M.S., 1959, Lehigh University, Ph.D., 1970, Rutgers University. Biochemistry. Mode of Action and Substrate Specificity of Riboflavin Synthetase. Function of NADP linked isocitric dehydrogenase in the mitochondria.

G. W. E. Plaut and R. L. Beach, "Substrate Specificity and Stereospecific Mode of Action of Riboflavin Synthetase," Flavins and Flavoproteins, chapter 82, Edited T. P. Singer, Elseviev Scientific Publishing Co., Amsterdam, (1976).

G. W. E. Plaut and R. L. Beach, "Interaction of Riboflavin Synthetase with Analogues of 6,7-Dimethyl-8-ribityl lumuzine," Chemistry and Biology of Pteridines, Walter de Gruyter, 101-124, (1976).

R. L. Beach, T. Aogaichi, and G. W. E. Plaut, "Identification of D-threo-α-Methylisocitrate as Stereochemically Specific Substrate for Bovine Heart Aconitase and Inhibition of TPN - Linked Isocitrate Dehydrogenase," J. Biol Chem., 252, 2702 (1977).

KENT, GERALD J. (b. 1930) Professor. B.S., 1955, Upsala College, M.A., 1958, Princeton University, Ph.D., 1959 Princeton University Organic Chemistry Organic synthesis and stereochemistry of fused polycyclic ring compounds.

G. J. Kent, S. A. Godleski, E. Osawa, and P. v. R. Schleyer, "Syntheses and Relative Stability of (D_3) Trishomocubane (pentacyclo [$6.3.0.0^{2,6}0.^{3,10}0.^{5,9}$] undecane, the pentacyclo undecane stabilomer." J. Org. Chem. 42, 3852, (1977).

E. Osawa, E. M. Engler, S. A. Godleski, Y. Inamoto, G. J. Kent, M. Kausch, and P. von Ragué Schleyer, "Bridgehead Reactivities of Ethanoadamantane," J. Org. Chem., 45, 984-991 (1980).

E. Osawa, D. Farcasiu, P. von R. Schleyer, E. M. Engler, A. Sevin, D. B. Ledlie, G. J. Kent, A. Togashi, Y. Tahara, T. Iizuka, N. Tanaka, and T. Kan, "Bromination Reactions of Ethanoadamantanes," J. Org. Chem. 1980 in press.

McCARROLL, WILLIAM H. (b. 1930) Professor. B.A., 1953, University of Connecticut, Ph.D., 1957, University of Connecticut. Inorganic Chemistry. Synthesis and characterization of transition metal oxides in unusual valence states. Metal atom clusters in oxide systems.

W. H. McCarroll "Structural Relationships in $ABMO_3O_8$ Metal Atom Clusters Oxides", Inorganic Chemistry, 16, 3351 (1977).
Grant Active 1980-1981 Research Corporation Cottrell College Science Grant $9,457, "Synthesis of complex Oxides of Molybdenum and Vanadium by Fused Salt Electrolysis."

232

ROTH, EDWIN A. (b. 1932) Associate Professor, B.S., 1954, Illinois Institute of Technology, Ph.D., 1961, Purdue University, Physical Chemistry, Alkylphosphonate esters of biologically active carbohydrates.

SHEATS, JOHN E. (b. 1939) Professor, B.S., 1961, Duke University Ph.D., 1966, Massachusetts Institute of Technology. Organometallic Chemistry. Synthetic and characterization of Metalocene Derivatives and Organometallic Polymers.

Seventeen publications, 1976-80.

C. E. Carraher, Jr., J. E. Sheats and C. U. Pittman, Jr. Eds., Organometallic Polymers, Academic Press, New York, 1977.

C. E. Carraher and J. E. Sheats, Perspective in Organometallic Polymers, Marcel Dekker, in press, 1981.

J. E. Sheats, "Chemistry of Cobaltocene, cobalticinium Salts and Related Compounds", J. Organometal. Chem. Lib. 7, 461-536 (1979).

J. E. Sheats, Chapter in Kirk-Othmer, Encyclopedia of Chemical Technology, John Wiley and Sons, New York, in press, anticipated March 1981.

N. El Murr, J. E. Sheats, W. E. Geiger, Jr. and J.D.L. Holloway, "Electrochemical Reduction Pathways of the Rhodocenieum Ion," Inorg. Chem., 18, 1443 (1979).

RIPON COLLEGE
Ripon, WI 54971

Fall 1980 ug enrollment 930
Degrees offered BA
Telephone (414) 748-8123

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 4. 2. Support staff, FTE's: Sec'y 0.2 Stockrm 0.5 Technical 0
3. 1980 seniors & their placement: Total 17 Grad. school 7 Industry 5 Professional schools 5 Other 0.
4. Senior majors, average past five years: 10.
5. Undergraduates involved in research, average past five years:
   Academic year 3 Summer 4
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   None.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 10,000
2. Instrumentation:

   NMR (Varian T-60)
   MS (Varian EM-600)
   IRs (PE 735, 237)
   GC (Carle 8000)
   GC Aerograph A90-P, 600-D
   UV Visible (PE 552, Gilford modified DU, B&L 505)
   X-Ray (GE-XRD-5 Fluorescence + diffraction)
   Liquid Scintillation Counter (NC-6555)
   AA (Beckman 440)

3. Library resources: CA? Yes Volume indices? to '80 Collected indices? Yes Total journal subscriptions? 14 Computer literature search service? yes Separate chemistry or science library? yes Librarian? 0.05 Standing orders for review series and annual reviews (past five years) 8.

4. Computer facilities: Dept.: 3, 8K PET microcomputers, 3, 32 K Commodore 80 column microcomputers, 2 interfaced to campus computer, DEC LA-36 Decwriter II, Commodore printer, A to D converter. Campus: Tektronix 4025 graphics terminal and 4062 digital plotter. DEC 11/70 time sharing.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   Approximately $1500 for chemicals and travel expenses.
   Approximately $6500 for equipment purchases (an endowed gift).
2. Departmental grants:

   Camille and Henry Dreyfus Foundation Innovation grant - $9400.

3. Faculty teaching loads: Contact hours 18 Load credit for research? no

4. Sabbatical or leave support for research:
   Full salary for one-half year or half salary for full year.
   Frequency in department averages eight years.

FACULTY PROFILE

BEATTY, JAMES W. (b. 1934) Professor and Acting Chairman. B.S., 1956, North Dakota State University, Ph.D., 1960, MIT. Physical Chemistry. Transport properties, reactive scattering with molecular beams, chemical kinetics, and applications of computers in chemistry.

J. Beatty, R. Scamehorn, and E. Scott, "Convenient Laboratory Storage of Glassware for Organic Chemistry", J. Chem. Educ. 56, 134 (1979).

J. Beatty, and R. Scamehorn, Reaction Kinetics, University Press of America, 1977.

Grant active 1979-1980: The Camille and Henry Dreyfus Foundation, Inc., $9,400, Computer Assisted Instructions in Chemistry for Students Inadequately Prepared for College Chemistry.

CHILDS, ALLAN H. (b. 1948) Assistant Professor. B.S., 1970, Iowa State University, M.S., 1973, Ph.D., 1980, Kansas State University. Analytical Chemistry and Biochemistry. Atomic spectroscopy, separations, instrumentation, membrane transport.

Childs, Allan H., and R. Clarenburg, "Are receptors involved in hepatic uptake of anions?", Transactions of the Kansas Academy of Sciences, 82, 114(1979).

Clarenburg, R., and Allan H. Childs, "How the liver removes substances from the bloodstream I: Background and working hypothesis", Transactions of the Kansas Academy of Sciences, 81, 139-140(1978).

Childs, Allan H., and R. Clarenburg, "How the liver removes substances from the bloodstream II: Experimental evidence for the involvement of receptors", Transactions of the Kansas Academy of Sciences, 81, 138-139(1978).

Childs, Allan H., and W. G. Schrenk, "Some characteristics of low pressure, sulfur, microwave-excited, electrodeless discharge lamps", Applied Spectroscopy, 30, 507-509(1976).

SCAMEHORN, RICHARD G. (b. 1942) Associate Professor. B.A., 1964, Hanover College, Ph.D., 1968, Northwestern University. Organic Chemistry. Organic reaction mechanisms, carbanion rearrangements, aromatic nucleophilic substitution.

J. Beatty, R. Scamehorn, and E. Scott, "Convenient Laboratory Storage of Glassware for Organic Chemistry", J. Chem. Educ., 56, 134(1979).

R. G. Scamehorn, and J. F. Bunnett, "Substituent Effects in $S_{RN}1$ Reactions of Aryl Iodides with Pinacolone Enolate Ion", J. Org. Chem., 44, 2604(1979).

J.F. Bunnett, R. G. Scamehorn, and R. P. Trabes, "Solvents for Aromatic $S_{RN}1$ Reactions", J. Org. Chem., 41, 3677(1976).

SCAMEHORN, RICHARD G., cont'd

R. G. Scamehorn and J. F. Bunnett, "Dark Reactions of Halobenzenes with Pinacolone Enolate Ion. Evidence for a Thermally Induced Aromatic $S_{RN}1$ Reaction", *J. Org. Chem.*, *42*, 1449(1977).

R. G. Scamehorn and J. F. Bunnett, "Photostimulated $S_{RN}1$ Reactions of Halobenzenes with Ketone Enolate Ions in Dimethyl Sulfoxide Solution", *J. Org. Chem.*, *42*, 1457(1977).

Grant active 1980-81: Research Corporation Cottrell College Science Grant, $5900, thermally initiated free radical nucleophilic aromatic substitution reactions.

SCOTT, EARLE S. (b. 1922) Professor and Chairman. B.A., 1949, Reed College, Ph.D., 1952, University of Illinois, Urbana. On leave at University of Wisconsin, June 1980-December 1980 (with Prof. Shakhashiri). *Inorganic Chemistry*. Nitrogen chemistry, open chain and cyclic compounds containing the hydrazine moiety; chemical education, development of course materials and experiments.

J. Beatty, R. Scamehorn, and E. Scott, "Convenient Laboratory Storage of Glassware for Organic Chemistry", *J. Chem. Educ.*, *56*, 134 (1979).

ROANOKE COLLEGE
Salem, Virginia 24153

Fall 1980 ug enrollment 1250
Degrees offered B.A.,B.S.
Telephone (703) 389-2351

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5 . 2. Support staff, FTE's: Sec'y 0 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 8 Grad. school 3 Industry 5 Professional schools 0 Other 0 .
4. Senior majors, average past five years: 9 .
5. Undergraduates involved in research, average past five years:
   Academic year 3 Summer 1
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   none

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 16000
2. Instrumentation:

NMR (Varian EM-300)	GC (Varian 600C, Gow-Mac 69-100)
MS (Varian EM-600)	AA (Perkin-Elmer 290)
IR (Beckman Acculab I, Perkin Elmer 457)	LC (Spectra Physics 3100)
	X-Ray (GE XRD-5)
UV-Vis (Coleman Hitachi ESP 3T, Beckman DU)	Polarograph (Fisher 65)
	Osmometer (Hewlett Packard 502)

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 33 Computer literature search service? No Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 18 .

4. Computer facilities:

   Department: DEC PDP/11 minicomputer with A/D,D/A.
   Campus (Academic): DG Eclipse C-350.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   Approx. $1000/yr for research chemicals, $3000-$5000/yr for equipment

2. Departmental grants:

   NSF/ISEP $5,500

3. Faculty teaching loads: Contact hours 12 Load credit for research? No

4. Sabbatical or leave support for research:

   Sabbatical leave program provides 50% salary for full year, or full salary for half year.

FACULTY PROFILE

BONDURANT, CHARLES W. JR. (b. 1918) Professor. A.B., 1939, Emory and Henry College; M.S., 1950, Ph.D., 1960, Virginia Polytechnic Institute and State University. *Analytical Chemistry*. Chemical Education.

DALTON, JAMES R. (b. 1952) Assistant Professor. B.A., 1974, Gettysburg College; Ph.D., 1978, University of South Carolina. Research Associate, 1978-1979, Marquette University, 1979-1980, University of South Carolina. *Organic Chemistry*. Organic synthesis, mechanistic studies.

S. L. Regan and J. R. Dalton, "Alumina-Assisted Aryl Cyanation", *J. Org. Chem.*, *44*, 4443(1979).

R. L. Cargill, J. R. Dalton, S. O'Conner, D. G. Michels, "Tricyclo-(6.3.0.0^{1,6})undecan-2-one and its Isomerization to Tricyclo(3.3.3.0)-undecan-2-one", *Tetrahedron Lett.*, *1978*, 4465.

A. T. Rowland, R. S. Drawbaugh, J. R. Dalton, "Steroid Oxetanones. 3. Synthesis of 5,7a-Epoxy-5a-cholestan-6-ones", *J. Org. Chem.*, *43*, 487(1977).

FISHER, CHARLES H. (b. 1906) Adjunct Research Professor. B. S. ,1928, Roanoke College; M.S., 1929, Ph.D., 1932, University of Illinois. Director, USDA Southern Regional Research Laboratories, 1950-1972. *Organic Chemistry*. Organic synthesis, homology.

C. H. Fisher, B. P. Huddle, "Equations Relating Homolog Properties to Chain Length", *Ind. J. Chem.*, *16A*, 1008 (1978).

HUDDLE, BENJAMIN P. (b. 1941) Associate Professor and Chairman. B.S., 1963, Lenoir Rhyne College; Ph.D., 1968, University of North Carolina. *Physical Chemistry*. X-ray crystal structure analysis, use of computers in chemistry, homology.

C. H. Fisher, B. P. Huddle, "Equations Relating Homolog Properties to Chain Length", *Ind. J. Chem.*, *16A*, 1008 (1978).

B. P. Huddle and K. Whitmire*, "Improved Victor-Meyer Apparatus", *J. Chem. Ed.*, *54*, 261 (1977).

MILLER, VERNON R. (b. 1941) Assistant Professor. B.A., 1963, Manchester College; Ph.D., 1968, Southern Illinois University. Research Associate, 1968-1970, University of Florida; 1970-1974, University of Virginia. *Inorganic Chemistry*. Inorganic synthesis, synthesis and catalytic properties of metalloboranes.

V. R. Miller, R. Weiss, R. N. Grimes, "Polyhedral Cobaltoboranes. Versatile Replacement of BH Groups by Co(η^5-C_5H_5) Units in Boron Hydride Frameworks. Borane-Metal Cluster Hybrid Molecules", *J. Amer. Chem. Soc.*, 99, 5646 (1977).

V. R. Miller, R. N. Grimes, "Proton-Proton Spin Coupling in Metallocarboranes. Triple-Resonance NMR Spectroscopy as a Structural Probe for Boron Compounds", *Inorg. Chem.*, *16*, 15 (1977).

W. M. Maxwell, V. R. Miller, R. N. Grimes, "Cobalt-Hydrogen Metallo-

MILLER, VERNON R., cont'd

carboranes. Synthesis of Closo-$((CH_3)_2C_2B_2H_4)_2CoH$ and Nido-closo-$((CH_3)_2C_2B_3H_5)CoH((CH_3)_2C_2B_2H_4)$ and their Conversion to New Cobalt-Cobalt Bonded Metallocarboranes", *J. Amer. Chem. Soc.*, *98*, 4818 (1976).

W. M. Maxwell, V. R. Miller, R. N. Grimes, "Iron-Hydrogen and Cobalt-Iron Metallocarboranes. Synthesis and Chemistry of $((CH_3)_2C_2B_4H_4)_2Fe(II)H_2$ and a novel Tetracarbon Carborane System, $(CH_3)_4C_4B_8H_8$", *Inorg. Chem.*, *15*, 1343 (1976).

V. R. Miller and R. N. Grimes, "Cobalt-Boron Cluster", *J. Amer. Chem. Soc.*, *98*, 1600 (1976).

OETGEN, RONALD R. (b. 1937) Associate Professor. A.B., 1960, M.S., 1962, Ph.D., 1965, Case Western Reserve University. Research Associate, 1965-1966, University of California (Berkeley). *Organic and Biochemistry*. Carbohydrate Chemistry, chemical education.

ROCHESTER INSTITUTE OF TECHNOLOGY
Rochester, NY 14623

Fall 1980 ug enrollment 9500
Degrees offered A.S., A.A.S.,B.S., M.S.
Telephone (716)-475-2497

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 14 . 2. Support staff, FTE's: Sec'y 1 Stockrm 6 Technical 1
3. 1980 seniors & their placement: Total 15 Grad. school 4 Industry 8 Professional schools N/A Other 3 .
4. Senior majors, average past five years: 16 .
5. Undergraduates involved in research, average past five years:
   Academic year 10 Summer Co-op
6. Master's program? Yes Master's degrees conferred, average past five years. 5
7. National honors, undergraduate or senior majors, past five years:
   One NSF Graduate Fellowship - 1977, Douglas G. Batt

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 21,000
2. Instrumentation:
   NMR (VARIAN CFT-20 and P.E.-R-20)
   I.R. (P.E. 621, Beckman IR-8, P.E. 137 and 252)
   U.V.-VIS (P.E. 450, CAREY 219)
   HPLC - WATERS, 3000 PSI
   GC (2-VARIAN 1520, P.E. 3B, BECKMAN GC2A)
   AA (P.E.-303)
   Raman (SPEX-SPECTRA PHYSICS-SSR)
3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 85 Computer literature search service? Yes*Separate chemistry or science library? Yes Librarian? Yes Standing orders for review series and annual reviews (past five years) 35 .
   *BRS, LOCKHEED, SDC
4. Computer facilities: Campus: Xerox-Sigma-9 Computer,
   Department: Mini Computer (Varian 620i); DEC-PDP 11/V03

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   Approx. $15,000/yr. for chemicals, glassware; $15,000/yr. for equipment

2. Departmental grants: NSF-LOCI Grant ($24,000) - "The Development of a Chemistry/Toxicology Interface Course."
   NSF-URP ($11,000), NSF-ISEP ($9,500) and NSF - High School mini-course (3) ($21,000)
3. Faculty teaching loads: Contact hours 10 Load credit for research? Yes

4. Sabbatical or leave support for research:
   Faculty can apply for sabbatical leave at 50% salary for full year, full salary for one quarter.

FACULTY PROFILE

ADDUCI, JERRY M. (b. 1934) Associate Professor, B.S., 1957, University of Rochester, Ph.D., 1963, University of Pennsylvania. Organic Chemistry. Synthesis and Characterization of thermally stable polymers, block co-polymers and membranes for reverse osmosis.

J. M. Adduci, "Modification of Thermally Stable Aromatic Polymers," Danish Research Council, September, 1980.

BIGLER, WILLIAM N. (b. 1937) Associate Professor and Head, Department of Clinical Sciences. B.S., 1960, UC-Berkeley, M.S., 1963, San Jose State College, Ph.D., 1968, University of Colorado. Biochemistry. Biochemistry of differentiation of Physarum polycephalum. Sister chromatid exchange as a method for meutagenicity screening. Clinical assay methodologues for selected enzymes.

W.N. Bigler and B.M. Tolbert, "Enzyme Activity and Allosteric Characteristics of Gamma-irradiated Solid Aspartate Transcarbanylase," Radiation Research, 72, 371(1978).

W.N. Bigler and B.M. Tolbert, "Sedimentation and Subunit Interactions of Gamma-irradiated Solid Asparate Transcarbamylase," Radiation Research, 72, 384 (1978).

BUTLER, SUSANNAH M. (1949) Visiting Assistant Professor, B.S., 1971, Michigan State University, Ph.D., 1977, SUNY-Stony Brook. Physical. Laser Fusion targets and plasma chemistry. Gas phase reaction kinetics and characterization of small molecules and atomic species.

J.R. Miller, S. Butler and J.K. Feuerherd, "Microparticle Dispenser", Rev. Sci. Instr., 49, 268(1978).

CAIN, B. EDWARD (b. 1942) Associate Professor, B.A., 1964, Harpur College, SUNY-Binghamton, Ph.D., 1971, Syracuse. Inorganic. Chemical Education - methodologies and adaptations for the handicapped student.

J. Zerbe and E. Cain, "The Tutor/Notetaker as a Support Service for Deaf Students: Managing a T/N Support Program," in The Handicapped Student on Education, Proceedings of the Third National Conference, AHSSPPE, pp., 167-169, 1980.

GILMAN, ROBERT E. (b. 1932) Professor(Sabbatical 1980-81). A. B. Dartmouth College, 1954, M.S. Organic Chemistry, University of Michigan, 1957, Ph.D., 1959, University of Michigan. Organic Chemistry. Organic synthesis in cyclophane, thiophene and xanthate systems.

HAYLES, WILLIAM J.(b. 1927) Professor, B.S., 1950, Wesleyan University, PhD.,1958 Iowa State University. Physical/Analytical. Use of mini- and micro-computers for data collection from instruments and the treatment of the collected data.

HENZEL, KAY G. (b. 1946) Visiting Assistant Professor, B.S., 1968, Bucknell University, Ph.D., 1972, Ohio State University. Synthetic Organic Synthesis of natural products and sesquiterpenes using novel organic reactions, neighboring group participation studies of cyclooctatetraene.

KRAKOWER, EARL (b. 1939) Professor and Head of the Department, B.Sc., 1960, McGill University, M.Sc., 1963, University of British Columbia, Ph.D., 1966, University of British Columbia. Physical. Nuclear Magnetic Resonance. Chemical Education - Vitalization of the lecture using Lap-Dissolve Slide Projection.

E. Krakower, D.N. Harpp, J.P. Snyder and L.W. Fine, "Lap-Dissolve Slides: Multiple-Use Formats for Pre-laboratory Instruction." J. Chem. Educ., 54, 72, (1977).

LIPPERT, JOSEPH L. (b. 1944) Associate Professor, B.S., 1966, South Dakota School of Mines and Technology, Ph.D., 1970, University of Colorado. Physical Chemistry. Laser Raman, Vibrational Spectroscopy of polymers and biopolymers. Physical proterties of materials and films. Adhesion.

J. L. Lippert, R. M. Lindsay and R. M. Schultz, "Laser-Raman Investigation of Lysozyme-Phospholipid Interactions," Biochem.Biophys.Acta, 599, 32 (1980).

J. L. Lippert and R. Shultz, "Temperature-Indused Conformational Changes in Ca^{2+}-Mg^{2+} - ATPase Systems," Annals of New York Academy of Sciences, 1980, in Press.

C. D. Scoville, D. H. Turner, J. L. Lippert, and G. N. Abraham, "Study of the Kinetic and Structural Properties of a Monoclonal Immunoglobulin G. Cryoglobulin, J. Biol. Chem., 255, 5847 (1980).

J. L. Lippert, R. M. Lindsay, R. Schultz and D. M. Osterhout, "Laser Raman Spectroscopic Investigations of Lipid and Protein Conformations in Sarcoplasmic Reticulum, Biophys. J., 25, 108a (1979).

1977-1979; "Raman Spectral Studies of Lipid-Protein Interactions," PHS, $61,769.

MORRILL, TERENCE C. (b. 1940) Professor, B.S., 1961, Syracuse, M.S., 1964, San Jose State, Ph.D., 1966, Colorado. Organic.Sterochemistry and mechanisms of ionic and free radical reactions of organosulfur compounds; transmercuration and halogenolysis of organoboranes; crown ether and crystate complexes of lanthanides.

R.L. Shriner, R.C. Fuson, D.Y. Curtin and T.C. Morrill, "Systematic Identification of Organic Compounds," 6th edition, Wiley, N.Y., 1980.

R.M. Silverstein, G.C. Bassler and T.C. Morrill, "Spectrometric Identification of Organic Compounds," 4th edition, Wiley, N.Y., 1980.

N. Zefirov, T.C. Morrill, et al., J. Org. Chem. Russia,Russian Acad. Sci., Vol. XVI, 580(1980).

SCOTT, FRANCIS L. (b. 1928) Visiting Professor, B.Sc., 1948, Cork, M.Sc., 1949, Cork, Ph.D., 1952, Cork, D.Sc., 1957, Cork. Bio-organic. Mechanisms, particularly of bio-organic reactions and the exploration of mechanisms whereby drugs, and other xenobiotics, exert toxic effects.

SCOTT, FRANCIS L., cont'd

T. A. Briody, A. F. Hegarty and F. L. Scott, "Elimination-Addition Mechanism for the Base Catalyzed Conversion of S-Alkylisothioureas to Ureas," Tetrahedron, 33, 1469 (1977).

F. J. Lalor, F. L. Scott, G. Ferguson and W. C. Marsh, "Deoxygenation Reactions of as-Triazine Oxides: Unusual Reactivity of Naphtho-1,2-e- 1,2,4-triazin-2(3H)-one 1-Oxides and the Crystal and Molecular Structure of 3-Methylnaphtho-1,2-e-1,2,4-triazin-2(3H)-one-1-Oxide," J. Chem. Soc., Perkin I, 789 (1978).

F. L. Scott, "A Review of Some Current Drugs Used in the Pharmacotherapy of Organic Brain Syndrome," in Physiology and Cell Biology of Aging Aging, Vol. 8 , ed. by A. Cherkin et. al. (Dr. Scott was also one of the editors of this volume), Raven Press, N. Y., 151-184, 1979.

R. C. Griffith, R. J. Gentile, T. A. Davidson and F. L. Scott, "Convenient One-Step Synthesis of N-Substituted α-Methylphenethylamines via Aminomercuration-Demercuration." J. Org. Chem., 44, 3580-3583 (1979).

G. Hite, J. B. Anderson, T. L. Thomas, T. A. Davidson, R. C. Griffith and F. L. Scott, "Structure of (αR:1R:2R- S:1S:2S)-α-Methyl-[hydroxy-2-phenylcyclohexyl]-acetate acid," Acta Crystallographica, B35, 3082-3084 (1979).

TAKACS, GERALD A. (b. 1943) Associate Professor, B.Sc., 1965, University of Alberta, Ph.D., 1971, University of Wisconsin. Physical Chemistry. Atmospheric Chemistry, Chemical Kinetics, Photochemistry, Thermochemistry.

A. P. Uthman,* P. J. Demlein,* T. D. Allston,* M. C. Withiam, M. J. McClements and G. A. Takacs, "Photoabsorption Spectra of Gaseous CH_3Br, $BrCH_2CH_2Br$, BrNO, $SOCl_2$, and SO_2Cl_2," J. Phys. Chem., 82, 2252 (1978).

T. D. Allston,* M. L. Fedyk,* and G. A. Takacs, "Photoabsorption Spectra of Some Halogen-Substituted Methyl Nitrogen Oxides," J. Photochem. 9, 116 (1978).

W. D. Taylor,* T. D. Allston,* M. J. Moscato,* G. B. Fazekas,* R. Kozlowski* and G. A. Takacs, "Atmospheric Photodissociation Lifetimes for Nitromethane, Methyl Nitrite, and Methyl Nitrate," Int. J. Chem. Kinetics, 12, 231 (1980).

D. M. Giolando,* G. B. Fazekas,* W. D. Taylor* and G. A. Takacs, "Atmospheric Photochemistry of CF_2ClBr." J. Photochem., 14, 335 (1980).

VUKANOVIC, VLADIMIR (b. 1923) Visiting Professor. B.S., 1951, University of Belgrade, Ph.D., 1961, Munster, West Germany. Physical. Plasma Chemistry and Atomic Emission Spectroscopy.

I. Radic-Peric, V. M. Vukanovic, M. Peric and M. Rekalic: "Radical Distribution of Calcium in C. D. Arc Plasma in Presence of Fluorine." Spectrochimica Acta B., 35B, 307 (1980).

I. Holelajtner-Antunovic, V. Vukanovic, V. Cadez, V. Georgijevic: "Axial Mass Transport and Distribution of Particles in Arc Plasma." Spectrochim. Acta B , 33B, 649 (1978).

V. Vukanovic, D. Vukanovic, M. Simic, H. Nickel, M. Mazurkiewicz: "Some Investigations of Rotating Conditions in Spectrochemical D. C. Arc Light Sources in Horizontal Graphite Tube." Spectrochim. Acta B , 33B, 481 (1978).

V. Vukanovic and E. Coyle: "Hydrogen isotope separation in d.c. arc plasma" Journ. Appl. Physics, 50, 3935 (1979).

ROLLINS COLLEGE

Winter Park, Florida 32789

Fall 1980 ug enrollment 1363

Degrees offered BA

Telephone (305)-646-2219

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 4 . 2. Support staff, FTE's: Sec'y 1.0 Stockrm 0.75 Technical 0.3
3. 1980 seniors & their placement: Total 4 Grad. school 2 Industry 0
Professional schools 2 Other 0 .
4. Senior majors, average past five years: 4 .
5. Undergraduates involved in research, average past five years:
Academic year 5 Summer 2
6. Master's program? No Master's degrees conferred, average past five years. N/A
7. National honors, undergraduate or senior majors, past five years:

1979 - Jay W. Grate, NSF Graduate Fellowship

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 19,000
2. Instrumentation:

NMR-Varian T-60
MS-Finnigan 3000
3 GC's - Varian 920 (2); and 2100 (1)
IR's - Beckman IR20 and Hilger Watts 1200
AA - PE 403
Electropolarograph (Bendix)
UV-Visible - Cary 15 and Beckman DU
with Aminco-Morrow
Stopped Flow Apparatus
Polarograph (PAR 174)
X-Ray Diffractometer (GE XRD-5)

3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 20 Computer literature search service? yes Separate chemistry or science library? yes Librarian? yes Standing orders for review series and annual reviews (past five years) 9 9 .

4. Computer facilities:
Heath CRT and Texas Instruments portable Model #983801-003 (Silent 700)
DEC PDP11/40 Time Sharing System

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
Approximately $3,000.00 per year for chemicals, project grants and student research assistants (summer).
2. Departmental grants:
None.

3. Faculty teaching loads: Contact hours 12 Load credit for research? No

4. Sabbatical or leave support for research:
Full salary for one-half year after five years and tenure. Frequency averages ten years.

FACULTY PROFILE

Blossey, Erich C. (b. 1935) Professor and Department Head. B.S. 1957 Ohio State University; M.S. 1959 Iowa State University; Ph.D. 1963 Carnegie-Mellon University, Organic Chemistry. Natural products; solid-phase synthesis and reactions of bio-organic molecules and co-enzymes.

Eng-Wilmot, David L. (b. 1947). Assistant Professor. B.S. 1969 Eckerd College; Ph.D. 1978. University of South Florida; NIGMS Post Doctoral Fellow 1979 University of Oklahoma. Inorganic Chemistry. Bioinorganic chemistry and chelate-mediated metal-ion transport (siderophores and ionophores); role of structure, absolute configuration in transport; single crystal x-ray diffraction.

D. van der Helm, J.R. Baker, D.L. Eng-Wilmot, M.B. Hossain and R.A. Loghry, The Crystal Structure of Ferrichrome and a Compansen with the Structure of Ferrichrome A, J. Am. Chem. Soc. 102 (12) 4224-4231 (1980).

M.B. Hossain, D.L. Eng-Wilmot, R.A. Loghry and D. van der Helm, Circular Dichroism, Molecular and Crystal Structure and Absolute Configuration of the Siderophore, Ferric N, N', N" - Triacetylfusarinine, $FeC_{39}H_{57}N_6O_{15}$. J. Am. Chem. Soc. 102(18), 5766-5773 (1980).

D.L. Eng-Wilmot and D. van der Helm, Molecular and Crystal Structures of Agrobactin, the Linear Tricatechol Siderophore from Agrobacterium tumefaciens, J. Am. Chem. Soc. in press (1980).

D.L. Eng-Wilmot and D. van der Helm, Structure of Trichostatin A, a Primary Hydroxamate Antibiotic, Acta. Crystallogr. accepted, (1980).

D.L. Eng-Wilmot, M.B. Hossain and D. van der Helm, The Molecular and Crystal Structures of the Mono- and Disodium Salts of Hadacidin, an Antibiotic Hydroxamic Acid, Acta Crystallogr., accepted, (1980).

Ramsey, Brian G. (b. 1937) Visiting Professor. B.S. University of South Carolina, 1956; M.S. 1958 University of Wisconsin; Ph.D. 1962 Florida State University. Phys. Organic Chemistry. Molecular spectroscopy and photochemistry, particularly with respect to organometalloids.

Naphthylboryne: A Monovalent Organoboron Carbene Analogue from Photolysis of Tri-1-naphthylboron, Brian G. Ramsey and Dennis M. Anjo, J. Amer. Chem. Soc. 99 , 3182 (1977).

A Comparison of the Role of Charge Transfer, Hyperconjugation, Inductive and Field Interactions in Substituted Methyl and Silyl Substitutent Effects on Benzene π Vertical Ionization Energies, Brian G. Ramsey, J. Organometal. Chem. 135, 307 (1977).

A Comparison of Modified CNDO/2 Calculations and the Photoelectron, NMR and UV Spectroscopic Properties of Boron-Substituted Monophenylboranes, Brian G. Ramsey and Shane J. O'Neill, J. Organometal. Chem. 141, 257 (1977).

Substitutent Effects on Imidazole Basicity and PES Determined Ionization Energies, Brian G. Ramsey, J. Org. Chem. 44, 2093 (1979).

The ^{1}H and ^{13}C NMR Spectra of Substituted Boryl Benzenes, Brian G. Ramsey and Kenneth Longmuir, J. Org. Chem. 45, 1322 (1980).

Hellwege, Herbert E. (b. 1921) Professor. Ph.D. 1953 University of Hamburg, Hamburg, Germany. Physical-Inorganic Chemistry. Thermodynamics of aqueous and non-aqueous solutions, with emphasis on complex equilibria.

RUSSELL SAGE COLLEGE
Troy, NY 12180

Fall 1980 ug enrollment 1350
Degrees offered BA
Telephone (518) 270-2230

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 6 . 2. Support staff, FTE's: Sec'y 0.2 Stockrm 0 Technical 0.3
3. 1980 seniors & their placement: Total 6 Grad. school 1 Industry 5
Professional schools 0 Other 0 .
4. Senior majors, average past five years: 7 .
5. Undergraduates involved in research, average past five years:
Academic year 7 Summer 3
6. Master's program? no Master's degrees conferred, average past five years: NA
7. National honors, undergraduate or senior majors, past five years:

None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 ~24,000
2. Instrumentation:

NMR (Varian, EM-360)
IR (PE - 137)
VIS-UV (PE - 202, Beck. DBGT)
AA (PE - 107)
GC (PE - 154)
HPLC (Waters)
Spectrofluorimeter (PE - 204A)
Liq. Scint. Counter (HP - 4609)
Ultra centrifuge (Beckman L5-50B)
Polarograph (Sargeant, Model II)

3. Library resources: CA? * Volume indices? * Collected indices? * Total journal subscriptions? 48 Computer literature search service? yes Separate chemistry or science library? no Librarian? no Standing orders for review series and annual reviews (past five years) 9 .
*complete through 1977. Recent editions available at RPI, 1 mile away)
4. Computer facilities: Campus: 5 CRT-terminals, 2 Decwriters, 2 Digilog port. terminals, 1 TV-demonstrator. All tied to either IBM 370 or Univac 1140.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: ~$800 direct support to senior projects; about $3000 per year for equipment primarily for research. Also, faculty summer research stipends available on competitive basis. $900 per year for faculty travel.
2. Departmental grants: Dreyfus Foundation, $20,000; NSF - ISEP, $20,000

3. Faculty teaching loads: Contact hours ~12 Load credit for research? no

4. Sabbatical or leave support for research:

A limited number of leaves, full year at half-pay.

FACULTY PROFILE

ARMSTRONG, ROGER W. (b. 1938) Professor and Chairman. B.S., 1959 Tufts University, Ph.D., 1970, Rutgers University, New Brunswick. Physical, Inorganic and Environmental Chemistry. Aquatic nutrient cycles, toxic contaminants in fish, dye-DNA complexes.

R.W. Armstrong and R. Sloan, Trends in Several Known Contaminants in Fish from New York Waters, NYDEC Report 80-2, (1980).

R.W. Armstrong, R.D. Baechler, L. Dulak, G. Glaros and F.H. Klappmeier, Laboratory Chemistry: A Life Science Approach, Macmillan, N.Y., N.Y. (1980).

BAECHLER, RAYMOND D. (b. 1945) Associate Professor. B.S., 1966, Fordham University M.A., 1968 and Ph.D., 1971, Princeton University. Organic Chemistry. Stereochemistry, thiosulfoxides as intermediates, pyramidal inversion barriers.

R.W. Armstrong, R.D. Baechler, L. Dulak, G. Glaros and F. H. Klappmeier, Laboratory Chemistry: A Life Science Approach, Macmillan, N.Y., N.Y. (1980).

R.D. Baechler, *S.K. Daley, *B. Daly and *K. McGlynn, "The Conversion of Allyl Sulfoxides into Allyl Disulfides via the Intramolecular Rearrangement of Thiosulfoxides," Tetrahedron Lett., 105 (1978).

R.D. Baechler and *S.K. Daley, "The Intermediacy of Thiosulfoxides in Deoxygenation of Sulfoxides with P_4O_{10}," Tetrahedron Lett. 101 (1978).

Grant, active 1975-1979: Petroleum Research Fund, Type G, $9,000. An Investigation of the Role as Thiosulfoxides as Reaction Intermediates.

CRANEY, CHRIS L. (b. 1948) Assistant Professor, B.S., 1970, University of Puget Sound, M.S., 1976 and Ph.D., 1977, Washington State University. Biophysical Chemistry. Interaction of small ions with biopolymers, characterization of algal nucleic acids, development of chemical instrumentation.

C. Craney and H. Krakauer, "A Low Cost UV Column Monitor for Use in Teaching Laboratories", Chem. Instrum. 8, 295 (1978).

DONNELLY, KATHLEEN A. (b. 1947). Assistant Professor. B.A., 1969, College of St. Catherine, Ph.D, 1976, Baylor College of Medicine. Biochemistry. Complex carbohydrates, genetic carbohydrate deficiencies.

A. L. Arbisser, K.A. Donnelly, C. I. Scott, N. DiFerrante, J. Singh, R.E. Stevenson, A.S. Aylsworth and R. R. Howell, "Mild Morquio Syndrome with Keratin Sulfaturia but Normal 6-Sulfatase Activity." Amer. J. of Med. Genet., 1, 195 (1977)

K. A. Donnelly and N. M. DiFerrante, "Urinary 3,6-anhydroglucosamine." Res. Commun. in Chem. Path. and Pharm., 13, 93 (1976).

GLAROS, GEORGE R. (b. 1941). Associate Professor, B. Chem., 1965, University of Minnesota, Ph.D., 1971, University of Nebraska. Organic Chemistry. Olefinic addition reactions, sulfinyl halides, organic chemistry experiments for undergrads.

R. W. Armstrong, R. Baechler, L. Dulak, G. Glaros and F. H. Klappmeier. Laboratory Chemistry: A Life Science Approach, Macmillan N.Y., N.Y. (1980).

G. Glaros, "The Oxidation of Primary Alcohols to Aldehydes with Pyridinium Chlorochromate: An Organic Chemistry Experiment," J. Chem. Ed. 55, 410 (1978).

G. Glaros and *S. Sullivan, "The Addition of Arenesulfinyl Chlorides to Olefins," Synthetic Commun. 6, 495 (1976)

KLAPPMEIER, FREDERICK H. (b. 1930) Associate Professor, A.B., 1957, Utica College of Syracuse University, Ph.D., 1965, Rensselaer Polytechnic Institute. Analytical Chemistry. Analytical method development, air particulates, fluorescence spectroscopy.

R. W. Armstrong, R. Baechler, L. Dulak, G. Glaros, F. H. Klappmeier Laboratory Chemistry: A Life Science Approach, Macmillan, N.Y., N.Y. (1980).

*L. T. H. Fernandez and F. H. Klappmeier, "An Experiment for Instrumental Analysis: The Determination of Aspirin by Ultraviolet Absorption," J. Chem. Ed., 55, 266 (1978).

ST. JOHN'S UNIVERSITY
Collegeville, MN 56321

COLLEGE OF ST. BENEDICT
St. Joseph, MN 56374

Fall 1980 ug enrollment 3700 combined

Degrees offered B.S., B.A.

Telephone 612-363-3152

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 9 . 2. Support staff, FTE's: Sec'y 0.5 Stockrm 1 Technical 0
3. 1980 seniors & their placement: Total 12 Grad. school 3 Industry 0 Professional schools 7 Other 2 .
4. Senior majors, average past five years: 11 .
5. Undergraduates involved in research, average past five years:
   Academic year 10 Summer 4
6. Master's program? no Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   NONE

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 15,000
2. Instrumentation:

One NMR VARIAN (EM 360)	Two IR PE (137)
Two NQR WILKS (1A)	Two GC CARLE (8000)
One CALORIMETER GUILD (400)	One IR PE (257)
One AA PE (360)	One GC PE (820)

   One POLAROGRAPHIC ANALYZER PAR (364) with SMDE EG & G PARC (303)

3. Library resources: CA? Yes Volume indices? Yes Collected indices? No Total journal subscriptions? 21 Computer literature search service? Yes Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 4 .
4. Computer facilities: Department: CRT (NCR-796-101), DIGITAL (LA 36 DECWRITER II)
   Campus: PDP 11/70, HP 2000, HARRIS/4

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   Approximately $2000/yr chemicals & glassware; $1500/yr for equipment
2. Departmental grants:
   LISTED UNDER RESPECTIVE FACULTY
3. Faculty teaching loads: Contact hours 13 Load credit for research? Occasional
4. Sabbatical or leave support for research:
   Faculty may apply for sabbatical leave at 50% salary for a full year or a full salary for one-half year. Seven year waiting period between sabbaticals.

ST. JOHN'S UNIVERSITY
COLLEGE OF ST. BENEDICT

FACULTY PROFILE

FULTON, ROBERT B., (b. 1942) Associate Professor and Chairman. B.A., 1964, University of Minnesota-Duluth, Ph.D., 1968, University of Minnesota. *Analytical Chemistry*. Development of Ion Selective Spectrophotometric methods for the analysis of "free" metal ions in biological fluids.
Robert B. Fulton and Byron Kratochvil, Measurement of Free Ion Concentrations by Spectrophotometry: The Sample Ion Increment Method, *Anal*. *Chem*., *52*, 546 (1980)

GRANT - MacPherson Faculty Development Fellowship, $3,800.00, MacPherson Foundation of St. Paul.

HUBER, DAVID T., (b. 1942) Instructor. B.S., 1964, St. John's University, M.S., 1967, Ohio State University. *Organic Chemistry*.

HUGHES, MARK B., (b. 1931) Professor. B.A., 1953, St. John's University, Ph.D., 1958, Iowa State University. *Organic Chemistry*

JOCHMAN, RICHARD L., (b. 1948) Assistant Professor. B.S., 1970, St. Norbert College, M.S., 1974, University of Kansas, Ph.D., 1978, University of Kansas. *Medicinal Chemistry*. Synthesis of metabolically stable analogs of brain peptides.

GRANT - Bremer Foundation, $1,500.

MULDOON, WILLIAM P., (b. 1943) Instructor. B.S. Pharm; 1972, Massachusetts College of Pharmacy. Ph.D., 1980, University of Minnesota. *Medicinal Chemistry*. Organic and Biochemistry.
Herbert T. Nagasawa, William P. Muldoon, and Frances Shirota, Nitramino Acids. Synthesis and Biological Evaluation of 1-Nitroproline, 1-Nitropepecolic Acid, and N-Nitrosarcosine.

NEFT, SISTER NIVARD, (b. 1922) Associate Professor. B.S., 1946, College of St. Benedict. Ph.D., 1971, Utah State University. *Biochemistry*. Inhibition of mitochondrial electron transport system by analogs of antimycin A; biosynthesis of antimycin A.
J. Sesney, S. N. Neft and R. Stringham, The Development of an Integrated Science Core Curriculum for Allied Health Students. *J. of Allied Health*, *6*, 34 (1977).

RIOUX, FRANK J., (b. 1942) Associate Professor. B.A., 1964, Bradley University, M.S., 1967, Iowa State University, Ph.D., 1969, Iowa State University, *Physical Chemistry*. Quantum chemistry - applications of series solution approach to quantum mechanical problems; development of illustrative quantum mechanical calculations for undergraduates.
Five publications from 1969-1976.
F. Rioux and P. Kroger*, Charge Cloud Study of Atomic and Molecular Structure, *Amer*. *J*. *Phys*., *44*, 56 (1976).

RIOUX, FRANK J., cont'd

F. Rioux, Simple Calculation of the Lattice Energy of Lithium Hydride, J. Chem. Educ., 54, 555 (1977)

F. Rioux and D. K. Harriss, Series Solutions and the Variation Principle, J. Chem. Physics, 70, 1151 (1979)

F. Rioux and D. K. Harriss, Self-Consistent-Field Calculation for Undergraduates, Amer. J. Physics, 48, 439 (1980).

D. K. Harriss and F. Rioux, A Simple Hartree SCF calculation for a one-dimensional Model of the He Atom, J. Chem. Educ., 57, 491 (1980).

GRANT - MacPherson Fellowship for research on electron correllation in helium - Summer 80-81.

ROSS, MICHAEL R., (b. 1947) Instructor, B.S., 1969, Sioux Falls College, Ph.D., 1980, University of Minnesota, Analytical Chemistry. Surface Analytical Chemistry. 3-M Company 1969-1973; Product Development. Mt. St. Clare College 1973 - 1976; Instructor.

M. R. Ross and J. F. Evans, "Probing the Structure of Silanized Surfaces with Secondary Ion Mass Spectrometry and Thin-Film Analysis", Proc. 7th Midland Macromol. Inst. Symp., 99 (1980).

J. F. Evans, M. Ross, and D. M. Ullevig, "Sims Depth Profiling of Thin and Ultra Thin Films of Covalently Bonded Organic Overlayers", Secondary Ion Mass Spectrometry, Sims II; A. Bennighoven, C. Evans, R. Powell, R. Shimizu, H. Storms, Eds., Springer-Verlag. N.Y., 1979; p. 278.

WULFSBERG, GARY P., (b. 1944) Assistant Professor. B.S., 1966, Iowa State University, Ph.D., 1971, University of Wisconsin. Inorganic and Organometallic Chemistry. Metal derivatives of chlorocarbons, nuclear quadrupole resonance (NQR) spectroscopy, coordination chemistry of poly-and crown ethers.

G. Wulfsberg and A. Weiss, "Halogen-Metal Secondary Bonding. III. An NQR Study in Mercury and Cadmium Halide Adducts of Polyethers", Ber. Bunsenges. Physikal. Chem., 84, 474 (1980).

G. Wulfsberg, R. J. C. Brown, *J. Graves, *D. Essig, *T. Bonner, and M. Lorber, Halogen-Metal Secondary Bonding. II. A Variable-Temperature and -Pressure NQR Study of Inter- versus Intramolecular Secondary Bonding in Mercury Derivatives of Chlorocarbons, Inorg. Chem., 17, 3426 (1978)

G. Wulfsberg, *J. Graves, *J. Griffiths, *D. Essig, and R. J. C. Brown, Chlorine-Mercury Interactions in Mercury Derivatives of Poly-Chlorinated Phenols and other Chlorocarbons, in M. V. Kennedy, ed., Disposal and Decontamination of Pesticides (A.C.S. Symposium Series #73), American Chemical Society, Washington, 1978, p. 145.

G. Wulfsberg and A. Weiss, Crown Ether Size Effects, Effective Matrix Isolation of Metal Halide, Ligand Conformation, and Halogen Bridging in Cadmium Halide-Poly-ether Adducts. A Nuclear Quadrupole Resonance, Infrared, and Raman Study, J.C.S. Dalton Trans., 1640 (1977)

G. Wulfsberg, Information on Structure and Basicity from the Nuclear Quadrupole and Infrared Spectra of Mercury Halide Adducts of Polyethers and a Crown Ether, Inorg. Chem., 15, 1791 (1976).

GRANTS active 1979-80: Research Corporation Cottrell College Science Grant, $6,000, 35CL NQR Studies of Inter- and Intramolecular Secondary Hatogen-Metal Bonding in Metal Derivatives of Chlorocarbons.

ST. JOSEPH COLLEGE
West Hartford, CT 06117

Fall 1980 ug enrollment 678
Degrees offered BA, BS, MA, MS
Telephone (203)-232-4571

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5 . 2. Support staff, FTE's: Sec'y 0.5 Stockrm 0.5 Technical NA
3. 1980 seniors & their placement: Total 5 Grad. school 2 Industry 2
Professional schools 0 Other 1 .
4. Senior majors, average past five years: 4 .
5. Undergraduates involved in research, average past five years:
Academic year 3 Summer 4
6. Master's program? yes Master's degrees conferred, average past five years: 5
7. National honors, undergraduate or senior majors, past five years:

None.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 15,000 .
2. Instrumentation:
NMR (Varian T-60)
IR (PE 137; 237)
UV-Vis (Varian Super Scan;
Beckman DK-2)
AA (Varian 1200)
Multichannel Analyzer (T-N)
GC (PE 226; Aerograph A-90)
Fluor. (Baird SF 1)
Gilson respirometer
ESR (Alpha X-band)
GC-MS (HP 5992 B)

3. Library resources: CA? 26-70 Volume indices? 26-70 Collected indices to '65 Total journal subscriptions? 25 Computer literature search service? no Separate chemistry or science library? no Librarian? no Standing orders for review series and annual reviews (past five years) 5 .
*Now part of Consortium library planning
4. Computer facilities:
Wang 2400 (3); Tektronix

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: about $2500/yr:research supplies; travel to present research papers, etc.

2. Departmental grants: NSF,SOS,'79-'80, $12,000; DOE Faculty Development Programs, '79-'80, Energy Conservation; Nuclear Energy Education $9,900 and $17,880; Conn. General Challenge Grant for Mass Spectrometer, $25,000

3. Faculty teaching loads: Contact hours 12 Load credit for research? occasional

4. Sabbatical or leave support for research: One-half salary after six years for sabbatical; leave of absence by arrangement.

FACULTY PROFILE

CRAMER, JOHN A. (b. 1944) Assistant Professor and Chairman. A.B., 1966, Oberlin College, Ph.D., 1972, Ohio University. Biochemistry. Membrane transport of biogenic amines, nuclear magnetic resonance of biomolecules.

J.A. Cramer, I. M. Armitage, and V. T. Marchesi, "Reversible Trifluoracetic Acid-Induced Conformational Changes in Glycophorin A As Detected by Proton Nuclear Magnetic Resonance Spectroscopy", Biochim. Biophys. Acta, 595, 235 (1980).

J. H. Prestegard, J. A. Cramer, and D. B. Viscio, "NMR Determinations of Permeation Coefficients for Maleic Acid in Phospholipid Vesicles", Biophys. J., 26, 575 (1979).

J. H. Prestegard and J. A. Cramer, "NMR Studies of pH-Induced Transport across Phospholipid Vesicle Model Membranes", in Biomolecular Structure and Function, Academic Press, 87 (1978)

J.A. Cramer and J. H. Prestegard, "NMR Studies of pH-Induced Transport of Carboxylic Acids across Phospholipid Vesicle Membranes", Biochem. Biophys. Res. Commun., 75, 295 (1977).

V. J. Caride, W. Taylor, J.A. Cramer, and A. Gottschalk, "Evaluation of Liposome-Entrapped Radioactive Tracers as Scanning Agents. Part 1: Organ Distribution of Liposome (^{99m}Tc-DTPA) in Mice", J. Nuc. Med., 17, 1067 (1976).

Grant 1978-1980: William and Flora Hewlett Foundation Grant of Research Corporation, $7,000, Systematic Investigation of Biogenic Amine Accumulation within Synthetic Unilamellar Phospholipid Vesicle Membranes.

MARKHAM, SR. CLAIRE (b. 1919) Professor. B.A., 1940, St. Joseph College; Ph.D. 1952, Catholic University of America. Post-doctoral fellowships spring semester, 1967, Norwegian Institute of Technology, Trondheim, Norway; 1967-68, Chemical Biodynamics Laboratory, University of California, Berkeley. Photochemistry, Surface Chemistry, Energy Conversion and Storage.

M.C. Markham and K. Wasczyna, "Dye Adsorption on Surface of Chrysotile Asbestos", Env. Sci. and Tech., 10, 1930 (1976)

M.C. Markham, "Energy Use in Connecticut's Schools", Issues and Answers, Conn. State Dept., Ed. 3, #1, pg 2 (1979)

M.C. Markham, "Energy Choices: Few and Hard", Cath. Transcript, LXXI, 1 (1979)

MCKONE, HAROLD T. (b. 1941) Associate Professor. B.S., 1963, Boston College, Ph.D. Univ. of New Hampshire, 1968. Organic Chemistry, Analytical Separations. Synthesis of organo-iron complexes, high performance liquid chromatography of natural products and synthetic dyes, quantitative analysis of organic peroxides.

Twelve publications 1975-1980.

H.T. McKone, "Acylation of Ferrocene", J. Chem. Educ., 57, 380 (1980)

H.T. McKone, and K. Ivie, "An Introduction to High Performance Liquid Chromatography: Separation of Some FD&C Dyes", J. Chem. Educ., 57, 321 (1980)

H. T. McKone, "High Performance Liquid Chromatography of Essential Oils", J. Chem. Educ., 56, 698 (1979)

H. T. McKone, Modular Laboratory Program in Chemistry "Separation and Identification of Some Food Drug and Cosmetic Dyes by Thin Layer Chromatography", Willard Grant Press, Boston, MA 1980.

ST. JOSEPH COLLEGE

MURPHY, SR. MARY ELLEN (b. 1928) Professor. B.S., 1950 St. Joseph College, M.A., 1956, Wesleyan University, Ph.D. 1965, Fordham University. *Organic Geochemistry and Analytical Chemistry*.

S.M.E. Murphy, "Geochemistry of Petroleum and Source Rocks from the Paradox Basin", U.S. Geological Survey, open-file report 1980 (in press).

DICKNEIDER, TRUDY A. (b. 1946) Assistant Professor. B.A., 1968, St. Joseph College, M.A., 1973, St. Joseph College, Ph.D., 1979, University of Miami. *Organic Chemistry - Organic Geochemistry*. Gas-Phase Acidities, synthesis of stereoselectively deuterated compounds, geochemistry of Triassic black shales.

SAINT JOSEPH'S UNIVERSITY
Philadelphia, PA 19131

Fall 1980 ug enrollment 2310
Degrees offered B.S., M.S.
Telephone (215) 879-7345

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 9. 2. Support staff, FTE's: Sec'y 1 Stockrm 1 Technical 0
3. 1980 seniors & their placement: Total 21 Grad. school 8 Industry 8 Professional schools 4 Other 1.
4. Senior majors, average past five years: 22.
5. Undergraduates involved in research, average past five years:
   Academic year 14 Summer 7
6. Master's program? Yes Master's degrees conferred, average past five years: 14
7. National honors, undergraduate or senior majors, past five years:

   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 20,000
2. Instrumentation:
   NMR (Varian-T60)
   MS (Varian EM600)
   GC (Beck. 409 & Carle 8700, CSD 800, 4 Gow-Mac 500, 3 Gow-Mac 550, Nester Faust 850, Varian 3700)
   IR (PE 457, 137, 700, Beck. 33, Acculab 1)
   UV-VIS (P-E 554, Beckman DB)
   Polarograph (PAR 364, Sargent XV)
   Fluor Spec (P-E 204)
   Differential Scanning Calorimeter (P-E 1B)
   HPLC (Waters ALC 202, Waters Prep LC500A, Anspec HPLC)
3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 62 Computer literature search service? Yes Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 25.
4. Computer facilities: Department: Interactive Concept Terminal, DEC Printer I Model LA 180. Campus: Univac 90/60, 12 Concept Terminals, 2 DEC Writer II, TI 820 Terminal, Software Supp., PLI, APL, FORTRAN, BMDP, SPSS, COBOL, PASCAL

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   $5,000

2. Departmental grants:

   Du Pont $7,000, Quaker Chemical $1,500, Rohm and Haas $3,000.

3. Faculty teaching loads: Contact hours 12 Load credit for research? No

4. Sabbatical or leave support for research:

   Full salary for one year w/eligibility after ten years & every ten years thereafter.

FACULTY PROFILE

BEICHL, GEORGE J. (b. 1918) Professor and Chairman. B.S., 1939, Saint Joseph's College, M.S., 1942, University of Pennsylvania, Ph.D., 1953, University of Pennsylvania. Physical and Inorganic Chemistry. Kinetics of reactions of amines with carbon tetrachloride; electronic spectra and thermal studies on copper complexes; reactions of boron hydrides; reactions of lithium nitride.

BERBERIAN, JOHN G. (b. 1941) Associate Professor. B.S., 1963, University of Massachusetts, Ph.D., 1966 Brown University. Physical Chemistry. Molecular relaxation in liquids.

J. G. Berberian and R. W. Simpson, "Construction of an Inexpensive Platinum Electrode," Rev. Sci. Instru., 47, 198 (1976).

J. G. Berberian, "Modification of a Commercial Admittance Bridge to Measure Large Conductances," Rev. Sci. Instru., 48, 1207 (1977).

J. G. Berberian and *J. Hayden, "Hemispherical Dielectric Permittivity Cell," Rev. Sci. Instru., 49, 1014 (1978).

J. G. Berberian, "A Method for Measuring Small Rotational Velocities for a Couette-type Viscometer," Rev. Sci. Instru., 51, 1136 (1980).

Grant active 1980-81: Research Corporation Grant, $2,300, Steady-State Viscosity of Supercooled 3 Bromopentane.

DiCARLO, ERNEST N. (b. 1936) Professor. B.S., 1958, Saint Joseph's College, M.S., 1960, Princeton University, Ph.D., 1962, Princeton University. Physical Chemistry. Microwave dielectric relaxation applied to the study of dynamic stereochemistry.

J. P. Hummel, E. P. Zurbach, E. N. DiCarlo, and K. Mislow, "Conformational Analysis of Triarylsilanes," J. Am. Chem. Soc., 98, 7480 (1976).

E. N. DiCarlo and E. P. Zurbach, "Interpretation of the Microwave Dielectric Relaxation of Iron Pentacarbonyl in Terms of the Molecule's Fluxional Nature,' J. Am. Chem. Soc., 100, 3959 (1978).

E. N. DiCarlo, "On Berry Pseudorotation in ML_5 Molecules and Microwave Dielectric Absorption," J. Am. Chem. Soc., 102, 2205 (1980).

KOOB, ROBERT P. (b. 1922) Professor. B.S., 1943, Villanova University, M.S., 1947, University of Pennsylvania, Ph.D., 1949, University of Pennsylvania. Physical Organic Chemistry. Phase studies on organic systems; Fries-type rearrangements; photochemical reactions.

Robert P. Koob and *Edward J. Thorne, "A Study of the Formation of Molecular Complexes Between Some Aromatic Amines and Dinitrobenzenes," J. Phys. Chem., 84, 640 (1980).

KRINER, WILLIAM A. (b. 1931) Associate Professor. B.S., 1953, West Chester State College, Ph.D., 1959, University of Pennsylvania. Inorganic Chemistry. Organometallic chemistry; cyclic organosilicon compounds.

KRINER, WILLIAM A., cont'd

W. A. Kriner, "The Interaction of Boron Halides with 1,1,3,3-Tetramethyl-1,3-Disilacyclobutane," J. Organometal. Chem., 134, 15 (1977).

NELSON, GEORGE L. (b. 1943) Professor. B.S., 1965, St. John's University, Minnesota, Ph.D., 1969, University of Wisconsin. Organic Chemistry. Synthesis and characterization of heterocyclic compounds; prostaglandins.

B. D. Polis, S. Kwong, E. Polis, H. Shmukler, and G. L. Nelson, "Studies on PG_{Bx}, A Polymeric Derivative of Prostaglandin B_1: Synthesis and Purification of PG_{Bx}," Physiological Chemistry and Physics Journal, 11, 109 (1979).

B. D. Polis, S. Kwong, E. Polis, and G. L. Nelson, "PG_{Bx} An Oligomeric Derivative of Prostaglandin B_1: Physical, Chemical, and Spectral Properties," Physiological Chemistry and Physics, 12, 167 (1980).

Contract active 1980-81: Naval Research, $81,800.

ROBERTI, DOMINIC M. (b. 1933) Associate Professor. B.S., 1955, Saint Joseph's College, M.S., 1958, Princeton University, Ph.D., 1959, Princeton University. Physical Chemistry. Determination of dipole moments; food chemistry; computer-assisted instruction.

SOBUS, MICHAEL T. (b. 1946) Assistant Professor. B.S., 1968, Loyola College, Maryland, Ph.D., 1977, University of Maryland. Biochemistry. Lipid metabolism.

M. T. Sobus and C. E. Holmlund, "Extraction of Lipids from Yeast," Lipids, 11, 341 (1976).

M. T. Sobus, "Effects of Trifluperidol on the Lipid Metabolism of Saccharomyces Cerevisiae," Fed. Proc., 35, 1699 (1976).

M. T. Sobus, C. E. Holmlund, and N. F. Whittaker, "Effects of the Hypocholesteremic Agent Trifluperidol on the Sterol, Steryl Ester, and Fatty Acid Metabolism of Saccharomyces Cerevisiae," J. Bacteriol., 130, 1310 (1977).

ZURBACH, E. PETER (b. 1948) Lecturer. B.S., 1970, Saint Joseph's College, M.S., 1972, Saint Joseph's College. Physical Chemistry. Electrochemistry; dielectric relaxation; instrumental analysis.

Jules B. Puschett and Peter Zurbach, "Acute Effects of Parathyroid Hormone on Proximal Bicarbonate Transport in the Dog," Kidney International, 9, 501 (1976).

J. P. Hummel, E. P. Zurbach, E. N. DiCarlo, and K. Mislow, "Conformational Analysis of Triarylsilanes," J. Am. Chem. Soc., 98, 7480 (1976).

E. N. DiCarlo and E. P. Zurbach, "Interpretation of the Microwave Dielectric Relaxation of Iron Pentacarbonyl in Terms of the Molecule's Fluxional Nature, J. Am. Chem. Soc., 100, 3959 (1978).

SAINT LOUIS UNIVERSITY

Saint Louis, MO 63103

Fall 1980 ug enrollment 3784

Degrees offered A.B., B.S., M.S.

Telephone (314)-658-2850

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 10 . 2. Support staff, FTE's: Sec'y 2 Stockrm 1/3 Technical 2/3
3. 1980 seniors & their placement: Total 62 Grad. school 8 Industry 13 Professional schools 33 Other 8 .
4. Senior majors, average past five years: 47 .
5. Undergraduates involved in research, average past five years:
   Academic year 25 Summer 6
6. Master's program? Yes Master's degrees conferred, average past five years: 4
7. National honors, undergraduate or senior majors, past five years:

   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 49,234
2. Instrumentation:

   NMR (Varian EM 360)
   NMR (Varian HA 100)
   ESR (Varian V 4502)
   UV-Visible (Cary 14)
   IR (PE 457)
   AA (PE 303)
   Polarograph (PAR 174)
   Research GC (Three)
   Thermobalance (PE TGS-1)
   Vapor Pressure Osmometer

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 65 Computer literature search service? No Separate chemistry or science library? No Librarian? ____ Standing orders for review series and annual reviews (past five years) 40 .

4. Computer facilities:

   Honeywell 6023

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   Non-capital and expendable items and equipment maintenance incorporated in Departmental budget of $40,500.
2. Departmental grants:

   NSF-URP $19,591

3. Faculty teaching loads: Contact hours 9 Load credit for research? no .

4. Sabbatical or leave support for research:
   Full salary for one-half year or half salary for full year each seven years.

FACULTY PROFILE

DIECK, HAROLD A. (b. 1942) Associate Professor. B.S., 1963, Tulane University, Ph.D., 1968, University of Texas at Austin. Organic Chemistry. Organotransition metal complexes: synthesis, chemistry and catalytic processes; synthesis of potential iron-overload drugs.

Grant Active 1980: The Society of the New York Hospital-Cornell Medical Center, $1,000.

DOUB, WILLIAM H. (b. 1946) Assistant Professor. B.S., 1968, California State Polytechnic University, Kellogg Campus, Ph.D., 1975, University of California, Riverside. Analytical Chemistry. Methods development and instrumentation design for electroanalytical chemistry; spectroscopic and electrochemical studies of biologically relevant molecules.

E. W. Askew, G. L. Dohm, P. C. Weiser, R. L. Huston and W. H. Doub, Jr., "Supplemental Dietary Carnitine and Lipid Metabolism in Exercising Rats", Journal of Nutrition and Metabolism, 24, 32-42 (1980).

E. D. Moorhead and W. H. Doub, Jr., "Tissue-Sequestered Group III-A Metals: Dilute, High Temperature NH_4SCN for Simultaneous Measurement of In and Ga by Phase-Selective Stripping Voltammetry", Analytical Letters, 10 (9), 673-684 (1977).

D. T. Sawyer, J. K. Howie, and W. H. Doub, Jr., "Oxidation-Reduction Chemistry of Oxo- and Sulfido-Bridged Binuclear Molybdenum(V) Complexes in Aprotic Media", Journal of the Less-Common Metals, 54, 425-463 (1977).

W. H. Doub, Jr., and E. D. Moorhead, "Digital Microcoulometric Measurements of Cadmium Anodic Stripping at the Micrometer Hanging Mercury Drop Electrode", Analytical Chemistry, 49, 199 (1977).

D. T. Sawyer, W. H. Doub, Jr., and P. J. Marsden, "Electrochemical Oxidation of Tetraethylammonium Hydroxide in Dimethyl Sulfoxide", Analytical Chemistry, 48, (11) 1628 (1976).

DURHAM, JUDITH E. (b. 1948) Associate Professor. B.S., 1970, University of Florida, Ph.D., 1975, University of Iowa. Organic Chemistry. Electroorganic chemistry including basic research on the mechanism and products of electroorganic reactions; the chemistry of activated carbonyl compounds.

Judith E. Durham, Kathryn N. McFarland and Peter Kovacic, "Polymerization of Aromatic Nuclei XVIII. Polymerization of Benzene to poly(p-phenylene) by Aluminum Chloride - Air - Water", J. Polym. Sci. 16, 1147-1157 (1978).

Judith E. Durham and Peter Kovacic, "Polymerization of Aromatic Nuclei XVII. Catalytic Hydrogenation of poly(p-phenylene)", J. Polym. Sci., 15, 2701-2706 (1977).

Judith E. Durham and Peter Kovacic, "Polymerization of Benzene by Aluminum Chloride", J. Polym. Sci. Polym. Letters Edition, 14, 347-349 (1976).

Stanley Wawzonek and Judith E. Durham, "Electrochemical Reduction of β-Ketoesters: The Tafel Rearrangement", J. Electrochem. Soc., 123, 500-503 (1976).

FORSBERG, JOHN H. (b. 1942) Professor and Chairman. B.S., 1964, University of Minnesota, Duluth, Ph.D., 1968, University of Illinois. Inorganic Chemistry. Lanthanide coordination chemistry; macrocyclic complexes; NMR studies of paramagnetic complexes; lanthanide(III) ions as homogeneous catalysts.

John H. Forsberg, Therald Moeller, "Rare Earth Elements - Coordination

FORSBERG, JOHN H., cont'd

Compounds" in Gmelin Handbuch der Anorganischen Chemie, System No. 39, Band D1, E. Schleitzer-Rust, T. Moeller, Editors, Springer-Verlag, Berlin, (1980). Volumes D2 and D3 of this four volume series are in press.

John H. Forsberg, "Yttrium", Enciclopedia della Chimica, VI, 675-8 (1977).

John H. Forsberg, T. M. Balasubramanian, V. T. Spaziano, "Homogeneous Catalysis Involving Lanthanide(III) Ions: Formation of 4-substituted-2,6-dimethylpyrimidines", J. Chem. Soc., Chem. Comm., No. 12, 1060 (1976).

M. F. Johnson and J. H. Forsberg, "Synthesis and Spectroscopic Studies of B,B',B''-triaminotriethylamine Chelates of the Trivalent Lanthanide Perchlorates", Inorg. Chem., 15, 734 (1976).

Grant Active 1979-81: American Chemical Society - Petroleum Research Fund, $13,000, with Vincent T. Spaziano.

HOHNSTEDT, LEO F. (b. 1924) Professor. B.S., 1949, Saint Louis University, Ph.D., 1955, University of Chicago. Inorganic Chemistry. Synthesis and characterization of borazines having nitrogen substituents containing carboxy or other hydrophilic groups.

Grant Active 1980: Beaumont Faculty Development, $1,250.

KOWERT, BRUCE A. (b. 1942) Associate Professor. B.S., 1964, University of Texas at Austin, Ph.D., 1971, University of Texas at Austin. Physical Chemistry. Spin relaxation processes and theory; ESR studies of molecular motion in liquids; rates and mechanisms of organic electron-transfer reactions.

Bruce A. Kowert, "Determination of the Anisotropic and Nonsecular Contributions to ESR Line Widths in Liquids", J. Phys. Chem., in press.

B. Kowert and D. Kivelson, "ESR Line Widths in Solution VIII. Two-component Diamagnetic Solvents", J. Chem. Phys., 64, 5206 (1976).

Grant Active 1978-80: Research Corporation, $3,300.

MALONE, LEO J. (b. 1938) Professor. B.S., 1960, University of Wichita, Ph.D., 1964, University of Michigan. Inorganic Chemistry. Synthesis and characterization of borane (H_3B) analogs of carbon compounds.

Leo J. Malone, Basic Concepts of Chemistry, John Wiley and Sons, 1981.

RAW, CECIL J.G. (b. 1929) Professor. B.S., 1951, University of Natal, South Africa, Ph.D., 1956, University of Natal, South Africa. Physical Chemistry. Molecular reaction dynamics; theoretical and experimental studies of oscillating chemical reactions; computer simulation of chemical systems far from equilibrium.

W. Yourgrau, A. Van der Merwe and G. Raw, Treatise on Irreversible and Statistical Thermophysics, Dover Publications, Inc., 1980.

C.J.G. Raw, *J. Frierdrich, *F. Perrino and G. Jex, "Oscillatory Gas Evolution from the System: Formic Acid - concentrated sulfuric acid - concentrated nitric acid", J. Phys. Chem., 82, 1952 (1978).

C.J.G. Raw, *J. Leonelli and G. Jex, "Reactive Molecular Beam Scattering", J. Chem. Educ., 55, 138 (1978).

C.J.G. Raw and *T. T. Raw, "Diffusion of Gaseous Fluoromethanes in Air", Chem. Phys. Letters, 44, 255 (1976).

RICE, BERNARD (b. 1914) Professor. B.S., 1937, George Washington University, Ph.D., 1948, University of Chicago. Physical Chemistry. Physical chemistry; spectroscopy; photovoltaic cells.

SPAZIANO, VINCENT T. (b. 1939) Associate Professor. B.S., 1961, Saint Joseph's College, Ph.D., 1970, Villanova University. Organic Chemistry. Organic reaction mechanisms; heterocyclic chemistry; synthesis of potential antitumor agents.

J.H. Forsberg, T. M. Balasubramanian and V. T. Spaziano, "Homogeneous Catalysis Involving Lanthanide(III) Ions: Formation of 4-substituted-2,6-dimethylpyrimidines", J. Chem. Soc. Sect. D., 1060 (1976).

Grant Active 1979-81: American Chemical Society - Petroleum Research Fund, $13,000, with John H. Forsberg.

SAINT OLAF COLLEGE
Northfield, MN 55057

Fall 1980 ug enrollment 3083
Degrees offered BA
Telephone (507) 663-3104

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 8 . 2. Support staff, FTE's: Sec'y 0.60 Stockrm 1 Technical 0.25
3. 1980 seniors & their placement: Total 52 Grad. school 11 Industry 13
Professional schools 28 Other -- .
4. Senior majors, average past five years: 43 .
5. Undergraduates involved in research, average past five years:
Academic year 8 Summer 5
6. Master's program? no Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

Scott W. Coffin, NSF Fellowship, 1979
Alan W. Magnuson, NSF Fellowship, 1980

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 30,000
2. Instrumentation:

NMR (EM 360L)
UV-VIS (Cary Model 17)
AA (P-E Model 303)
IR (P-E Model 457)
GC (Hewlett-Packard Model 5840A)
Polarograph (PAR-174)
Ultracentrifuge (Beckman Model L2-50)
X-Ray Diffraction (Philips/Norelco)
Spectrofluorometer (Aminco-Bowman)
Liquid Scintillation (Beckman Model LS-100C)

3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 55 Computer literature search service? yes Separate chemistry or science library? yes Librarian? yes Standing orders for review series and annual reviews (past five years) 10 .

4. Computer facilities:
Department: Video terminals (4), paper terminal (DecwriterII), PDP 11/10,
Campus: PDP 11/70 time-shared

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
Highly variable but department has responded to need (approximately $2000)

2. Departmental grants:
Johnson's Wax $2500, NSF (ISEP) $9500

3. Faculty teaching loads: Contact hours 12 Load credit for research? variable .

4. Sabbatical or leave support for research:
Faculty eligible for leave at 50% salary for full year and full salary for one-half year. Eligible every seventh year.

FACULTY PROFILE

FINHOLT, ALBERT E. (b. 1918) Professor. A.B., 1938, Knox College, Ph.D., 1946, University of Chicago. Inorganic Chemistry. Complex hydrides, Molybdenum dinitrogen compounds and diazenes, synthesis of lower oxidation state molybdenum organometallics.

A. E. Finholt, "General Chemistry in Liberal Arts Colleges", J. Chem. Educ., 55, 616(1978).

HARDGROVE, GEORGE L., JR. (b. 1933) Professor. A.B., 1956, Oberlin College, Ph.D., 1959, University of California at Berkeley. Physical Chemistry. Molecular Structure Determination by means of nuclear magnetic resonance and X-ray diffraction.

G. O. Spessard, G. L. Hardgrove, *D.K. McIntyre, *D.J. Townsend, and *G. S. Milleville, "Synthesis and Structure of Substituted Bicyclo [4.2.1] nona-2,4-dienes", J. Organic Chemistry 44, 2034(1979).

HENDRICKSON, H. STEWART (b. 1937) Professor. B.A., 1959, Pomona College, Ph.D., 1962, University of Illinois. Biochemistry. Membrane biochemistry; surface properties of lipids; lipolytic enzymes.

*C. Willman and H. S. Hendrickson, "Positive Surface Charge Inhibition of Phospholipase A_2 in Mixed Monolayers", Arch. Biochem. Biophys., 191, 298(1978).

H. S. Hendrickson and M.C.E. van Dam-Mieras, "Local Anesthetic Inhibition of Pancreatic Phospholipase A_2 Action on Lecithin Monolayers", J. Lipid Res., 17, 399 (1976).

H. S. Hendrickson, "The Penetration of Local Anesthetics into Phosphatidyl Choline Monolayers", J. Lipid. Res., 17, 393(1976).

Grants Active 1980-81: NIH Research Grant, $16,488.

MARSHALL, JOHN C. (b. 1935) Professor and Chairman. B.A., 1956, Luther College, Ph.D., 1960, State University of Iowa. Analytical Chemistry. Infrared Spectroscopy, Computer Applications in Chemistry.

Alan Hanna, John C. Marshall, and T. L. Isenhour, "A GC/FT-IR Compound Identification System", J. Chromatogr. Sci., 17, 424(1979).

G. T. Rasmussen, T. L. Isenhour, and J. C. Marshall, "Mass Spectral Library Searches Using Ion Series Data Compression", J. C. I. C. S., 19, 98(1979).

MIESSLER, GARY L. (b. 1949) Assistant Professor. B. Chem., 1970, University of Tulsa, Ph.D., 1978, University of Minnesota. Inorganic Chemistry. Charge transfer photochemistry of transition metal complexes of dithio ligands, homogeneous catalysis, synthesis of coordination compounds.

Six publications, 1975-80.

G. L. Miessler and L. H. Pignolet, "Photochemistry of dithiocarbamato complexes. 3. Photosensitized reactions of tris(N,N-dialkyldithiocarbamato) ruthenium(III) and the X-ray and molecular structure of chlorobis(N,N-dimethyldithiocarbamato) (N,N-dimethylthiocarboxamido) ruthenium(IV)", Inorg. Chem., 18, 210(1979).

G. L. Miessler, E. Zoebisch, and L. H. Pignolet, "Photochemistry of dithiocarbamato complexes. 2. Photolysis of iron(III) and iron(IV) complexes", Inorg. Chem., 17, 3636(1978).

S. H. Wheeler, B. M. Mattson, G. L. Miessler, and L. H. Pignolet, "Electrochemical and chemical properties of dithiocarbamato complexes of ruthenium(ii), ruthenium(III), and ruthenium(IV)", *Inorg. Chem.*, *17*, 340(1978).

K. W. Given, B. M. Mattson, M. F. McGuiggan, G. L. Miessler and L. H. Pignolet, "Photochemical reaction pathways of ruthenium(III) complexes. Ultraviolet irradiation of tris(N,N-dialkyldithiocarbamato) ruthenium(III)", *J. Am. Chem. Soc.*, *99*, 4855(1977).

G. L. Miessler, G. Stuk, T. P. Smith, K. W. Given, M. C. Palazzotto, and L. H. Pignolet, "Photochemistry of dithiocarbamato complexes. 1. Photolysis in chlorine-containing solvents", *Inorg. Chem.*, *15*, 1982(1976).

PEARSON, WESLEY A. (b. 1932) Professor. B.A., 1954, St. Olaf College, Ph.D., 1958, University of Minnesota, Minneapolis. *Organic Chemistry*. Stereochemistry of cyclic compounds and hydride reductions.

SPESSARD, GARY O. (b. 1944) Associate Professor. B.S., 1966, Harvey Mudd College, M.S., 1968, University of Wisconsin, Ph.D., 1970, Wesleyan University. *Organic Chemistry*. Synthesis and biosynthesis of terpenes. Synthesis of pepper alkaloids.

Gary O. Spessard, George L. Hardgrove, Jr., *Daniel K. McIntyre, *Daniel J. Townsend, and *Gregory S. Milleville, "Synthesis and Structure of Substituted Bicyclo [4.2.1] nona-2,4-dienes", *J. Org. Chem.*, *44*, 2034(1979).

TARR, DONALD A. (b. 1932) Associate Professor. B.A., 1954, Doane College, M.S., 1956, Ph.D., 1959, Yale University. *Physical and Inorganic Chemistry*. Coordination compounds, stereochemistry, kinetics and mechanisms of substitution reactions.

R. D. Gillard and D. A. Tarr, "New Optically Active Metal Ions", *Inorg. Chem. Acta*, *12*, L32(1975).

R. D. Gillard, D. J. Shepherd and D. A. Tarr, "Optically Active Co-ordination Compounds. Part XXXVIII. Circular Dichroism of Labile Trioxalatometallate(III) Complexes", *J. Chem. Soc.*, Dalton, 594(1976).

COLLEGE OF ST. SCHOLASTICA
Duluth, MN 55811

Fall 1980 ug enrollment 1100
Degrees offered B.A.
Telephone (218) 723-6066

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 4.0. 2. Support staff, FTE's: Sec'y .3 Stockrm — Technical .5
3. 1980 seniors & their placement: Total 4 Grad. school 1 Industry 3 Professional schools — Other —.
4. Senior majors, average past five years: 6.
5. Undergraduates involved in research, average past five years:
   Academic year 5 Summer 3
6. Master's program? NO Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   1980 - Sheri Haines, NSF fellowship

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 4000
2. Instrumentation:
   - NMR (Varian EM 360a)
   - MS (Varian EM 600)
   - GC (Varian 920)
   - IR (Beckman Microspec, IR-10)
   - UV/VIS (Beckman DBG; Cary 210)
   - TGA (Setaram TG-70)
   - DTA (Setaram DTA-80)
   - SCIN. COUNT (Packard Tricarb)
   - AA (Perkin-Elmer 460)
3. Library resources: CA? YES Volume indices? NO Collected indices? NO Total journal subscriptions? 30 Computer literature search service? YES Separate chemistry or science library? YES Librarian? YES Standing orders for review series and annual reviews (past five years) 15.
4. Computer facilities:

   Institution IBM System 34

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   About $4150 for projects, equipment, travel, meetings, publications
2. Departmental grants:

   National Science Foundation CAUSE grant, $151,000
3. Faculty teaching loads: Contact hours 9 Load credit for research? NO
4. Sabbatical or leave support for research: One-half salary for full year after seven years.

FACULTY PROFILE

ALICH, AGNES A. (b. 1932) Associate Professor and Chairperson. B.S., 1960, Marquette University, M.S., 1961, Marquette University, Ph.D., 1972, Northwestern University. Inorganic Chemistry. Trace Metal Effect on Drug Absorption, Trace Metals in Biological Systems, Synthesis and Characterization of Organometallic Compounds.

A.A. Alich and L.E. Wittmers, "Hydrolysis of Tetrakis-μ-acetylsalicylato-dicopper(II)," J. Pharm. Sci., 69, 725-727 (1980).

L.E. Wittmers, A.A. Alich and A.C. Aufderheide, "Lead in Bone: I. Direct Analysis for Lead in Milligram Quantities of Bone Ash by Graphite Furnace Atomic Absorption Spectroscopy," J. Clin. Path., 74, 75-80 (1980).

Grant active 1979-1980: Miller Dwan Medical Center Foundation, $4,800, Relationships of Metal Ions and Drugs in Absorption from the Gastrointestinal Tract.

CLARKE, MARGARET J. (b. 1938) Assistant Professor. B.S., 1962, Gonzaga University, M.S., 1968, Marquette University, Ph.D., 1976, Oregon State University. History of Chemistry. Chemical Industry in the United States during World War I.

RIEHL, AGATHA (b. 1921) Professor. B.A., 1942, College of St. Scholastica, M.S., 1945, Institute of St. Thomas, Ph.D., 1966, Catholic University of America. Organic Chemistry. Chromic Acid Oxidation of Carbonyl Compounds.

H.L. Kopperman, R.C. Hallcher, Sr. A. Riehl, R.M. Carlson and R. Caple, "Aqueous Chlorination of α-Terpineol," Tetrahedron, 32, 1621 (1976).

STEIN, PAUL J. (b. 1950) Assistant Professor. B.S., 1972, Bethany College, Ph.D., 1976, Duke University. Biochemistry. Structure-Function Relationships of Proteins.

P.J. Stein and *K.C. Heehn, "Fluorescence Polarization Studies of Saccharide Binding to Wheat Germ Agglutinin and Lysozyme," Biochem. Biophys. Res. Comm., 95, 547-552 (1980).

P.J. Stein and A.S. Mildvan, "Magnetic Resonance and Kinetic Studies on Initiator-Substrate Distances on RNA Polymerase from Escherichia coli," Biochemistry, 17, 2675-2685 (1978).

P.J. Stein, S.P. Merrill, and R.W., Henkens, "Carbon-13 Nuclear Magnetic Relaxation Study on Cobalt Carbonic Anhydrase: Evidence on the Location of Enzyme Bound CO_2 and HCO_3^-," J. Amer. Chem. Soc., 99, 3194-3196 (1977).

P.J. Stein, R.W. Henkens, B.S. Yamanashi and M. Wolbarsht," Studies on Brunescent Cataracts. II. Fluorescence Studies on Normal and Brunescent Lens Proteins," Opthal. Res., 8, 388-394 (1976).

Grant active 5/79-5/81: Research Corporation Cottrell College Science Grant, $10,200, Fluorescence Studies on the Structure of Serum Albumin.

UNIVERSITY OF SAN FRANCISCO

San Francisco, Ca. 94117

Fall 1980 ug enrollment 3108

Degrees offered Dept: BS,MS

Telephone (415) 666-6157

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 8 . 2. Support staff, FTE's: Sec'y 1 Stockrm 0.5 Technical 0
3. 1980 seniors & their placement: Total 13 Grad. school 4 Industry 3 Professional schools 3 Other 3 .
4. Senior majors, average past five years: 9 .
5. Undergraduates involved in research, average past five years: Academic year 8 Summer 3
6. Master's program? Yes Master's degrees conferred, average past five years: 1
7. National honors, undergraduate or senior majors, past five years:

   None.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 15,500
2. Instrumentation:
   NMR (Varian A-60D0)
   AA (IL 251)
   HPLC (Waters ALC 202)
   UV-Visible (P-E 55-204 and 139)
   GC (Varian Aerograph 712 and P-E Σ1)
   IR (P-E 337 and 421)
   Amino Acid Anal. (Beckman 120C)
   Spectrophotofluorometer (Aminco-Bowman)
   Photochemical Apparatus

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 50 Computer literature search service? No Separate chemistry or science library? Yes Librarian? 0.25 Standing orders for review series and annual reviews (past five years) 28 .

4. Computer facilities:
   Campus: UNIVAC 90/60 E, PDP 11/10, INTEL 8080 (microcomputer)

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   Seed money available for new faculty (at the discretion of the Dean), travel expenses (limited), routine stockroom support.
2. Departmental grants:

   None.

3. Faculty teaching loads: Contact hours 12 Load credit for research? At Dean's discretion.
4. Sabbatical or leave support for research: One-half salary after seven years of teaching and in the seventh year following each sabbatical leave granted.

UNIVERSITY OF SAN FRANCISCO

FACULTY PROFILE

COBLEY, JONATHAN G.(b. 1946) Assistant Professor. B.S., 1968, University of Bristol, U.K., Ph.D., 1972, University of Bristol, U.K. Biochemistry. Microbiology, energetics and membranes, photobiology.

W. J. Ingleden and J. G. Cobley, "A Potentiometric and Kinetic Study on the Respiratory Chain of Ferrous-Iron-Grown Thiobacillus Ferrooxidans," Biochimica et Biophysica Acta, 590, 141-158 (1980).

J. G. Cobley, "Reduction of cytochromes by NO$_2$ in Electron Transport from Nitrobacter winogradskyi; Proposal of a Mechanism for H$^+$ Translocation," Biochem. J., 156, 493 (1976).

J. G. Cobley, "Energy Conserving reactions in Electron Transport Particles from Nitrobacter winogradskyi, Activation of Nitrite Oxidation by the Electrical Component of the Proton motive force," Biochem J., 156, 481 (1976).

Grant: $25,000: Mechanism of Photosynthesis in a Chromatically Adapting Cyanobacterium; NSF Metabolic Biology.

DACHAUER, ANDREW C., S.J.(b. 1930) Assistant Professor. B.A., 1955, Spring Hill College, Ph.D., 1962, Fordham University. Organic Chemistry.

GRUHN, THOMAS A.(b. 1942) Associate Professor. B.S., 1964, University of San Francisco, Ph.D., 1968, University of California, Berkeley. Physical Chemistry. The physical chemistry of solid state nuclear track detectors.

T. A. Gruhn, *W. K. Li, E. V. Benton, R. M. Cassou and *C. S. Johnson, "Etching Mechanism and Behavior of Polycarbonates in Hydroxide Solutions: Lexan and CR-39," Proceedings of the 10th International Conference on Solid State Nuclear Track Detectors, Lyon, France, July 1979. Pergamon Press, New York (1980), pp 291-302.

HARRINGTON, JOHN S.(b.1950) Instructor. B.S., 1972, University of California, Santa Barbara, M.A., 1975, University of California, Santa Barbara. Inorganic Chemistry. Transition metal complexes: synthesis, spectroscopy and photochemistry.

R. J. Watts, J. S. Harrington and J. Van Houten, "A Stable Monodentate 2.2'- Bipyridine Complex of Iridium (III): A Model for Reactive Intermediates in Ligand Displacement Reactions of tris-2,2'Bipyridine Metal Complexes," J.American Chem. Soc., 99, 2179 (1977).

R. J. Watts, B. G. Griffith and J. S. Harrington, "The Luminescence of Hetero-bischelated Complexes of Iridium (III). II. Analysis of the Thermally Non-equilibrated levels in the Luminescence of Cis-dichloro - 1, 10 - phenanthroline-4, 7 - dimethyl - 1, 10 - phenanthroline Iridium (III)," J. American Chem. Soc., 98, 674 (1976).

JONES, THEODORE H.D. (b. 1938) Associate Professor. B.S., 1959, University of Edinburgh, Ph.D., 1966, Massachusetts Institute of Technology. Biochemistry. Biosynthetic pathways, enzymology and spore germination.

T. Jones, "Cellulases released during the Germination of Dictyostelium discoideum Spores," J. Bacteriology, 137, 752 (1979).

T. Jones, "Providing Relevance in Chemistry for Nursing Students," J.Chem.Educ., 53, 581 (1976).

JONES, THEODORE H.D., cont'd

T. Jones, "Development of an Integrated Laboratory Course-Research Program in Biochemistry," *J.College Science Teaching*, *V*, 316 (1976).

SEIWALD, ROBERT J.(b. 1925) Professor and Chairman. B.S., 1949, University of San Francisco, Ph.D., 1954, St. Louis University. *Organic Chemistry*. Derivative of uracil, acidity functions.

SODERQUIST, JOHN A.(b. 1944) Assistant Professor. B.S., 1966, Iowa State University Ph.D., 1977, University of Colorado. *Organic Chemistry*. Organometallic chemistry of main group elements: synthesis, photochemistry. Nine publications 1975-1980.

J. A. Soderquist and H. C. Brown, "Hydroboration. 56. A Convenient and Regiospecific Route to Functionalized Organosilanes through the Hydroboration of Alkenylsilanes," *J.Org.Chem.*, *45*, (1980).

H. C. Brown and J. Soderquist, "Molecular Addition Compounds.8. ^{13}C and ^{11}B Nmr Examination of β-Substituted Derivatives of 9-Borabicyclo (3.3.11) nonane and Their Pyridine Complexes," *J.Org.Chem.*, *45*, 846 (1980).

J. A. Soderquist and A. Hassner, "Unsaturated Acyl Derivatives of Silicone, Germanium, and Tin," *J.Am.Chem.Soc.*, *102*, 1577 (1980).

A. Hassner and J. A. Soderquist, "Thermal and Photochemical Behavior of 2-Sila- and Germa-Cyclopentanone," *Tetrahed. Lett.* *21*, 429 (1980).

J. A. Soderquist and A. Hassner, "Sila- and Germa-cyclopentan-2-ones from Mettalated Enol Ethers," *J.Org.Chem.*, *45*, 541 (1980).

Grants: $10,000: Silyalkylboranes: Highly Versatile Intermediates for Organic Synthesis, ACS-PRF.

$15,000: Acyl Anion Equivalents Via Transmetallation of Alpha-Methoxy-vinyltin Compounds, Research Corporation, Cottrell College Science.

SUMMERHAYS, KIM D.(b. 1946) Associate Professor. B.S., 1968, University of San Francisco, Ph.D., 1971, University of California, Davis. *Physical Chemistry*. Computer Applications in Chemistry, mechanisms of coupling interactions in NMR.

D. J. De Frees, M. Taagepera, B. A. Levi, S. K. Pollack, K. D. Summerhays, R. W. Taft, M. Wolfsberg, and W. J. Hehre, "Role of Hyperconjugation in Secondary β-Deuterium Isotope Effects," *J.Amer.Chem.Soc.*, *101*, 5532 (1979).

K. D. Summerhays, S. K. Pollack, R. W. Taft, and W. J. Hehre, "Gas Phase Basicities of Substituted Anilines. Inferences About the Role of Solvent in Dictating Site of Protonation," *J.Amer.Chem.Soc.*, *99*, 4585 (1977).

S. K. Pollack, J. L. Delvin, K. D. Summerhays, R. W. Taft, and W. J. Hehre, "The Site of Protonation in Aniline," *J.Amer.Chem.Soc.*, *99* 4583 (1977).

K. D. Summerhays and D. A. DePrez, "Self-Consistent Molecular Orbital Calculation of Nuclear Spin Coupling Constants in Organosilicon Compounds I. Trimethylsilyl Systems," *J.Organometal.Chem.*, *118*, 19 (1976).

UNIVERSITY OF SANTA CLARA
Santa Clara, CA 95053

Fall 1980 ug enrollment 3470
Degrees offered BS
Telephone (408)984-4299

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 6.9. 2. Support staff, FTE's: Sec'y 0.5 Stockrm 0.7 Technical 1.2
3. 1980 seniors & their placement: Total 14 Grad. school 3 Industry 5 Professional schools 5 Other 1.
4. Senior majors, average past five years: 18.
5. Undergraduates involved in research, average past five years:
   Academic year 11 Summer 3
6. Master's program? No Master's degrees conferred, average past five years: None
7. National honors, undergraduate or senior majors, past five years: None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 12,000
2. Instrumentation:

Polarimeter (Bellingham & Stanley, P10)	Polarograph (Sargent III)
X-Ray (Teltron 580M)	AA (P-E 303)
NMR (Varian EM-360)	Gouy Magnetic susceptibility
UV-Visible (Beckman DBGT)	Modular Instrument (McKee-Pederson 1000)
IR's (Beckman IR-8, 2 P-E 700's)	

GC's (Norelco WG-PYE, F&M 700, F&M 400, 2 Gow-Mac 69-100)

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 75 Computer literature search service? No Separate chemistry or science library? Yes Librarian? Yes Standing orders for review series and annual reviews (past five years) 55.
4. Computer facilities:

   University: DEC 2060, PDP 11-34, Hewlett-Packard 2100

   Department: Decwriter Terminal

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Several thousand dollars for equipment and supplies; travel for profs, grants from Dean and President.
2. Departmental grants: None
3. Faculty teaching loads: Contact hours 10.6 Load credit for research? Up to 7%.
4. Sabbatical or leave support for research:

   Sabbatical leave: 50% for full year; 83% for two terms; 100% for one term. Available after 6 consecutive years of full-time service.

FACULTY PROFILE

DECK, Joseph F. (b.1907) Professor. A.B., 1928, St. Louis University, M.S., 1930, St. Louis University, Ph.D., 1932, University of Kansas. Organic Chemistry. Heterocyclic chemistry; solid free radicals; organic synthesis.

W. T. Duffy, D. L. Strandburg, and J. F. Deck, J. Chem. Phys. 68, 2097-2104 (1978).

J. F. Deck, The Elements, U.S.C. Press (1978).

NATHAN, Lawrence C. (b.1944) Associate Professor. B.A., 1966, Linfield College, Ph.D., 1971, University of Utah. Inorganic Chemistry. Structure of complex ions; instrumental techniques; computers.

Seven publications 1976-1980.

M. J. Bigley*, K. J. Radigan*, and L. C. Nathan, Aliphatic Di-N-Oxide Complexes; Cobalt(II), Nickel(II), and Chromium(III) Perchlorate Complexes of N,N,N',N'-Tetramethylethylenediamine-N,N'-Dioxide, Inorg. Chim. Acta 16, 209-212 (1976).

L. C. Nathan, J. Cullen, and R. O. Ragsdale, Decomposition Studies of Amine N-Oxide Manganese(II) Complexes, Inorg. and Nuclear Chem. Letters 12, 137-140 (1976).

J. J. MacDougall*, L. C. Nathan, and John H. Nelson, 4-Substituted Quinoline N-Oxide Complexes of Copper(II) Acetate, Inorg. Chim. Acta 17, 243-246 (1976).

S. H. Wheeler*, S. C. Zingheim*, and L. C. Nathan, Preparation and Characterization of Some Mixed Ligand Complexes; Bispicolinatocobalt(II) and -nickel(II) with Heterocyclic Amines, J. of Inorg. and Nuclear Chem. 40, 779-783 (1978).

L. C. Nathan, J. E. Armstrong*, and R. O. Ragsdale, Some Amine N-Oxide Complexes of Trivalent Cobalt, Inorg. Chim. Acta 35, 293-296 (1979).

PFEIFFER, Robert J. (b.1930) Associate Professor and Chairman. B.S., 1953, University of Santa Clara, Ph.D., 1958, Cornell University. Organic Chemistry. Natural products; photochemistry; physical organic chemistry.

ROSENTHAL, Lois C. (b.1946) Assistant Professor. Ph.D., June 1975, University of California, Berkeley. Physical Chemistry: Raman spectroscopy, molecular motion in liquids, internal rotation, computers.

L. C. Rosenthal and H. L. Strauss, Rotational Correlation in Chloroform, Journal of Chemical Physics, 64, 282 (1976).

J. S. Anderson, W. E. Vaughan, L. C. Rosenthal, H. L. Strauss, Comment on Rotational Correlation in Chloroform, Journal of Chemical Physics 65, 2482 (1976).

L. C. Rosenthal and L. C. Nathan, Conductometric Potentiometric Titration for an Advanced Laboratory, J. Chem. Ed. (in press).

SHEEHAN, William F. (b.1926) Professor. B.S.(Honors), June 1948, Loyola University of Chigago. Ph.D., June 1952, California Institute of Technology. Physical Chemistry. Dissociation energies; valence state theory; structural chemistry.

W. F. Sheehan, Periodic Table with Emphasis, Chemistry 49, No. 3, pp 17-18, April, 1976. (This type of periodic table was copyrighted by W.F.S. in 1970.)

W. F. Sheehan, Dissociation Energies, Electron Affinities, and Electronegativities of Diatomic Molecules: An Empirical Correlation with Predictions for XY, XY^+, XY^-, J. Am. Chem. Soc. 100, 1348 (1978).

SWEENEY, Michael A. (b.1931) Associate Professor. B.S., 1953, Loyola University-Los Angeles, M.S., 1955, University of California (Berkeley), Ph.D., 1967, University of California (Berkeley). Radiation Chemistry; Analytical Chemistry. Origin of life, radiation chemistry; fuel combustion.

M. A. Sweeney, A.P. Toste, and Cyril Ponnamperuma, Formation of Amino Acids by Cobalt-60 Irradiation of Aqueous Hydrogen Cyanide Solutions, Origin of Life 7, 187 (1976).

Various NASA-Ames Grants.

WHITE, David H. (b.1945) Assistant Professor. B.S., 1967, Michigan State University, Ph.D., 1972, California Institute of Technology. Organic Chemistry; Biochemistry. Origin of Self-reproducing Systems, Origin of Life, Homoaromaticity.

Seven publications, 1976-1980.

N. Lahav, D. White, and S. Chang, Peptide Formation in the Prebiotic Era: Thermal Condensation of Glycine in Fluctuating Clay Environments, Science 201, 67 (1978).

D. H. White, Simulation in the Chemistry Classroom of Decision-Making Processes for Social Issues Involving Chemistry, Journal of Chemical Education, 56, 600 (1979).

D. J. Prolo, P. W. Pedrotti, and D. H. White, Ethylene Oxide Sterilization of Bone, Dara Mater, and Fascia Lata for Human Transplantation, Neurosurgery 6, 529 (1980).

D. H. White and J. C. Erickson,* "Catalysis of Peptide Bond Formation by Histidyl-Histidine in a Fluctuating Clay Environment," Journal of Molecular Evolution (accepted).

D. H. White, "A Theory for the Origin of a Self-Replicating Chemical System. I: Natural Selection of the Autogen from Short, Random Oligomers," Journal of Molecular Evolution (accepted).

NASA-Ames University Consortium Interchange Grant, 1980-1981, $30207.

Research Corporation, 1979-1980, $8200.

SIMMONS COLLEGE
Boston, MA 02115

Fall 1980 ug enrollment 1733
Degrees offered B.S.
Telephone (617) 738-2181

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 9. 2. Support staff, FTE's: Sec'y 1 Stockrm 0 Technical 0
3. 1980 seniors & their placement: Total 6 Grad. school 1 Industry 3 Professional schools 1 Other TEACHING 1.
4. Senior majors, average past five years: 7.
5. Undergraduates involved in research, average past five years:
   Academic year 5 Summer 6
6. Master's program? NO Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   None.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 20,000
2. Instrumentation:
   NMR (PE R-20)
   MS (Du Pont 21-491)
   UV (Hitachi EPS-3T)
   IR (PE 467)
   X-Ray (Powder Diffraction and access to SYNTEX P2$_1$ automated diffractometer)
   LC (Du Pont 841)
   GC (Varian 1520)
   Computing Integrator (Autolab System)
3. Library resources: CA? Yes Volume indices? Yes Collected indices? No Total journal subscriptions? 26 Computer literature search service? Yes Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 4.

4. Computer facilities: Department: DECLAB 11/03; Campus: timesharing to HP3000, VAX 11/780, PDP 11/70, PDP 2040, IBM 370/168; Tektronix 4010 Graphics Terminal, 4662 digital plotter.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   Equipment $2000 other-approximately $3000.

2. Departmental grants:
   NSF-URP $8000 General Electric Foundation $1400

3. Faculty teaching loads: Contact hours 12 Load credit for research? No

4. Sabbatical or leave support for research: Faculty can apply for sabbatical leave at 50% salary, full year; full salary for 1/2 year. Frequency averages every seventh year.

FACULTY PROFILE

FACULTY PROFILE

BECK, MAE L. (b.1926) Associate Professor. B.S., 1950, Michigan State University, M.A., 1955, Smith College, Ph.D., 1960, University of Pennsylvania. *Organic Chemistry*. Organic sulfur chemistry, free radical oxidations.

BELL, JERRY A. (b.1936) Professor. A.B., 1958, Harvard University, Ph.D., 1962, Harvard University. *Physical Chemistry*. Diazirine photolysis, photosensitized methylenecyclopropane reactions.

An Introduction to Experimental Biochemistry: Experiments with a Nutritional Flavor (Simmons, 1977).

BOWERS, PETER G. (b.1937) Professor and Chairman. B.A., 1961, Cambridge University, Ph.D., 1964, University of British Columbia. *Physical Chemistry*. Kinetics of the decomposition of formic acid in sulfuric acid; phase waves in oscillating reactions.

P.G. Bowers and *Yvette M. Dick, Oscillatory Nitrogen Evolution in the Decomposition of Aqueous Benzenediazonium Chloride, *J. Phys. Chem.*, *84*, 2498 (1980).

P.G. Bowers and *G. Rawji, Periodic Evolution of Carbon Monoxide in the Dehydration of Formic Acid by Sulfuric Acid, *J. Phys. Chem.*, *81*, 1549 (1977).

Grants active 1977-80 Simmons College Fund for Research, $430, Oscillatory Gas-Evolution Reactions.

BRAUNER, PHYLLIS A. (b.1916) Professor. A.B., 1938, Wheaton College, M.A., 1940, Wellesley College, Ph.D., 1959, Boston University. *Analytical Chemistry*. Chemical speciation by high pressure liquid chromatography; synthesis of rare earth laser materials.

P.A. Brauner, P.L. Brezonic, and W. Stumm, Trace Metal Analysis by Anodic Stripping Voltammetry: Effect of Sorption by Natural and Model Organic Compounds, *Water Research*, *10*, 605 (1976).

HARTMAN, ICLAL S. (b.1930) Professor. A.B., 1950, Mount Holyoke College, M.A., 1951, Mount Holyoke, Ph.D., 1963, University of Florida. *Biochemistry*.

F.J. Waller, I.S. Hartman and *S.T. Kwong, Titration of Alanine monitored by NMR Spectorscopy, *J. Chem. Ed.*, *54*, 447 (1977).

PIPER, JAMES U. (b.1937) Professor. B.S., 1959, Massachusetts Institute of Technology, M.S., 1961, Emory University, Ph.D., 1963, Emory University. *Organic Chemistry*. New amino protecting groups; synthesis of β-lactams related to pencillin.

E. Caspi, J.U. Piper and S. Shapiro, Mode of Enzymic Oxygenation at Primary Carbon Atoms: Stereochemistry of Hydroxylation of C-1 Chiral Octanes by *Pseudomonas oleovarans*. Chem. Comm. (accepted).

J.U. Piper, *M.Allard, *M.Faye, *L.Hamel, and V. Chow, Kinetics and Mechanism of Ynamine-Isocyanate Additions, *J. Org. Chem.*, *42*, 4261 (1977).

SOLTZBERG, LEONARD J. (b.1944) Professor. B.S., 1965, University of Delaware, M.A., 1967, Brandeis University, Ph.D., 1969, Brandeis University. Physical Chemistry. Mechanism of a solid-solid phase transformation; pattern recognition analysis.

Eleven publications, 1976-80.

L.J. Soltzberg, *S.J. Bobrowski, *P.A. Parziale, *E.C. Armstrong, *V.E. Cohn, Optical Study of Phase Transformation Hysterisis in p-Diiodobenzene, J. Chem. Phys. 71, 1652 (1979).

L.J. Soltzberg, *E.C. Armstrong, *P.A. Kelly, Aspects of the Polymorphic Phase Transformation in p-Diiodobenzene, Mol. Crys. Liq. Cryst., 50, 179 (1979).

L.J. Soltzberg, Computer Graphics for Chemical Education, J. Chem. Ed., 56 644 (1979).

L.J. Soltzberg, *M.W. Athearn, *J.E. Levy, and *E.L. Simpson, Interferometric Study of a Solid-Solid Phase Transition, App. Optics, 16, 3206 (1977).

L.J. Soltzberg and C.L. Wilkins, Molecular Transformations: A Potential Tool for Structure-Activity Studies, J. Amer. Chem. Soc., 99, 439 (1977).

Grants Active 1979-80: Petroleum Research Fund, $13,000, Characterization of a Single Crystal Phase Transformation.

UNIVERSITY OF THE SOUTH

Sewanee, TN 37375

Fall 1980 ug enrollment 1060

Degrees offered B.S., B.A.

Telephone (615) 598-5931

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 4 . 2. Support staff, FTE's: Sec'y 0 Stockrm 1/3 Technical 1/4
3. 1980 seniors & their placement: Total 8 Grad. school 0 Industry 2 Professional schools 2 Other 4 .
4. Senior majors, average past five years: 7 .
5. Undergraduates involved in research, average past five years:
   Academic year 1 Summer 1
6. Master's program? No Master's degrees conferred, average past five years: 0
7. National honors, undergraduate or senior majors, past five years:

   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 10,000
2. Instrumentation:

   UV-Vis (P-E 552)
   IR (P-E 72)
   GC (Varian 90-P)
   Coulometer (S-W, IV)
   NMR (Hitachi-P-E R-24B)
   Fluorescence spectrophotometer (P-E 650-40)
   Microcomputer interfaced Rapid Scan Polarograph (In-house built)

3. Library resources: CA? Yes Volume indices? Yes Collected indices? No Total journal subscriptions? 20 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 6 .

4. Computer facilities:

   Campus H-P 3000 Micro: IMSAI 8080, Altair, x-y plotter.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Approx. $1000/yr supplies. $1000 student support. $10,000 matching for instruments.

2. Departmental grants:

   None

3. Faculty teaching loads: Contact hours 12 Load credit for research? occasional

4. Sabbatical or leave support for research: Each 7 yrs. A half year at full salary, or full year at half salary. Faculty and students may take spring semester at Oak Ridge National Laboratory for full-time research in a cooperative ug plan.

FACULTY PROFILE

BORDLEY, JOHN L. JR. (b.1943) Associate Professor. B.S., 1965, Davidson College, Ph.D., 1972, The Johns Hopkins University. Physical Chemistry. Computer applications.

J.L. Bordley, Jr. and Paul H. Emmett, "Carbon-14 Tracer Studies of the Secondary Reactions in the Cracking of Hexadecane over Zeolite Catalysts," J. of Catalysis, 42, 367 (1976).

GUENTHER, WILLIAM B. (b.1928) F.B. Williams Professor of Chemistry. B.A., 1948, Oberlin College, Ph.D., 1954, University of Rochester. Physical and Analytical Chemistry. Equilibrium in aqueous solution.

W.B. Guenther, "Use of 2,3-Butanedione Monoxime for Homogeneous Precipitation of Nickel (II)," Anal. Letters, 12 (A12), 1305 (1979).

W.B. Guenther, "Buffers, Acids, Bases, and pH", CRC Handbook of Nutrition and Food. Chemical Rubber Co., Cleveland, Ohio, 1977.

KIRVEN, EDWARD P. (b.1946) Assistant Professor. B.A., 1968, The University of the South, Ph.D., 1976, The University of Minnesota. Organic Chemistry. Biosynthesis and synthetic methods.

LOWE, JAMES N. (b. 1936) Professor, Chairman. B.S., 1959, Antioch College, Ph.D., 1964, Stanford University. Organic Chemistry, Biochemistry. Biochemical reaction mechanisms.

J.N. Lowe, L.L. Ingraham, J. Alspach and R. Rasmussen, "A Proposed Symmetry Forbidded Oxidation Mechanism for the Bacterial Luciferase Catalyzed Reaction," Biochem. Biophys.Res.Comm., 73,465 (1976).

Grants: NSF, Two and Four-Year College Research Instrumentation Program, $16,200.

Research Corporation, "A Model Study of a Proposed Bacterial Luciferase Bioluminescence Reaction Mechanism." $15,200.

SOUTHERN METHODIST UNIVERSITY
Dallas, TX 75275

Fall 1980 ug enrollment 5580
Degrees offered B.A., B.S., M.S.
Telephone (214) 692-2476

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 6.5. 2. Support staff, FTE's: Sec'y 1 Stockrm 1 Technical 0
3. 1980 seniors & their placement: Total 26 Grad. school 2 Industry 10 Professional schools 10 Other 4.
4. Senior majors, average past five years: 22.6.
5. Undergraduates involved in research, average past five years:
   Academic year 23 Summer 8
6. Master's program? yes Master's degrees conferred, average past five years: 2
7. National honors, undergraduate or senior majors, past five years:

   None.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 15,371 (allotted to chemistry in a science building)
2. Instrumentation:

   IR: P-E 283, P-E 710B
   UV-Vis: Cary 118, Beckman DK2A, Du, GCA McPherson E4700
   X-ray: Norelco diffractometer
   TGA, DTA: Du Pont 900, 950
   GC/MS: Du Pont Dimaspec 321
   AA: P-E 303
   Liquid chromatograph: Waters
   GC: HP5830K, 5720
   NMR: P-E R32
   Polarograph: PAR 174A

3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 108 Computer literature search service? yes Separate chemistry or science library? yes Librarian? yes Standing orders for review series and annual reviews (past five years) 58.

4. Computer facilities: Department: Microcomputer w/I/O board, Z-80 CPU board, two floppy disk drives, LSI ADM computer terminal.
   University: CDC Cyber 73+CDC 6600; Kronos 2.1.2.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   ~$15,000/year for chemicals, equipment, travel, etc.
   ~$ 6,000/year for summer undergraduate research stipends.
2. Departmental grants:
   NSF - $13,000
   Conoco - $1,000

3. Faculty teaching loads: Contact hours avg. 10 Load credit for research? no

4. Sabbatical or leave support for research: One-half salary for two semesters or full salary for one semester after three years.

FACULTY PROFILE

BANEWICZ, JOHN J. (b. 1923) Professor and Chairman. B.S., 1945, Brown University, Ph.D., 1950, Rice University. Physical Chemistry. Thermodynamics of decomposition of transition metal complexes, magnetic properties of transition metal complexes, thermal decomposition of ancient bone.

H. Haas and J. J. Banewicz, "Radiocarbon Dating of Bone Apatite Using Thermal Release of CO_2," Radiocarbon, 22, (1980).

J. J. Banewicz, J. A. Maguire, *P O. Smith, *D. O. Lussky, *D. W. Sudbrink, and *D. E. Allen, "A thermodynamic investigation of the cobalt(II) bromide + acetonitrile and the cobalt(II) bromide + propionitrile systems," J. Chem. Thermo. (1980).

J. A. Maguire, J. J. Banewicz, and *C. L. Ragan, "A thermodynamic investigation of cobalt(II) chloride + acetonitrile," J. Chem. Thermo. 9, 821 (1977).

Grant active 1979-80: NSF, Radiocarbon Dating of Bone Apatite, $35,568 (2 years).

BIEHL, EDWARD R. (b. 1932) Professor. B.S., 1958, University of Pittsburgh, Ph.D., 1961, University of Pittsburgh. Organic Chemistry. Reaction mechanisms, the aryne reaction, heterocyclic chemistry, chromatographic analysis of drug mixtures.

E. R. Biehl, *W. Stewart, *A. Marks, and Perry C. Reeves, "Influence of the Cyano Group on Orientation of Nucleophiles to Aryne. 1. Reaction of isomeric halobenzonitriles with alkali amides in liquid ammonia," J. Org. Chem., 44, 3674 (1979).

R. E. Graham, E. R. Biehl, and C. T. Kenner, "Separation and determination of testosterone and testosterone esters in selected pharmaceutical formulations," J. Pharm. Sci. 68, 871 (1979).

R. E. Graham, E. R. Biehl, and C. T. Kenner, "Rapid Blue Tetrazolium Procedure for Analysis of Corticosteroids in Pharmaceutical Preparations," J. Pharm. Sci. 67, 792 (1978).

*Steven A. Golder, W. H. Tedford, Jr., William E. Flynn, and E. R. Biehl, "Effects of Wine Congeners on Rats' Behavior," J. Studies on Alcohol 38, 25 (1977).

*P. L. Pruitt, E. R. Biehl, and P. C. Reeves, "Photochemical Reactions of 1,2-Dimethylcyclobutadieneiron Tricarbonyl With Various Acetylenes," J. Organometallic Chem. 134, 37 (1977).

Grant active 1980-81: Robert A. Welch Foundation, Investigation of Certain Aspects of the Benzyne Reaction, $20,500/year.

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DONATO, HENRY, Jr. (b. 1947) Assistant Professor. B.S., 1968, College of Charleston, Ph.D., 1973, University of Virginia. *Biochemistry*. Electron transfer reaction of biomolecules, the free radical theory of aging.

H. Donato, Jr., M. A. Hoselton, and R. S Sohal, "Lipofuscin Accumulation: Effects of individual variation and selective mortality on population averages," *Exp. Gerontol.* *14*, 141 (1979).

H. Donato, Jr., M. A. Hoselton and R. S. Sohal, "An analysis of the effects of individual variation and selective mortality on population averages in aging populations," *Exp. Gerontol*. *14*, 133-140 (1979).

R. S. Sohal and H. Donato, Jr., "Effects of Experimentally Altered Life Spans on the Accumulation of Fluorescent Age Pigment in the Housefly, *Musca Domestica*," *Exp. Gerontology* *13*, 335 (1978).

H. Donato, Jr., and R. B Dunlap, "Interactions between tetrahydrofolate and palladium(II) complexes," *Chem. Biol. Interactions* *20*, 55 (1978).

H. Donato, Jr., and R. S. Sohal, "Age-related changes in lipofuscin-associated fluorescence substances in adult male houseflies, *Musca Domestica*," *Exp. Gerontology* *13*, 171 (1978)

Grant active 1980-81: Robert A. Welch Foundation, TheChemistry of the Aging Process, $19,000/year.

LATTMAN, MICHAEL (b. 1950) Assistant Professor. B.S., 1972, City College of New York, Ph.D., 1977, City University of New York. *Inorganic Chemistry*. High- and low-coordinate phosphorus and sulfur ligands in organometallic chemistry, main group acid-base complexes, photoelectron spectroscopy, molecular orbital theory.

A. H. Cowley, M. C. Cushner, M. Lattman, M. L. McKee, J. S. Szobota, and J. C. Wilburn, "The Preparation, Structures, and Reactions of Two-coordinate Phosphorus Cations," *Pure and Appl. Chem.*, *52*, 789 (1980).

F. A. Cotton, B. E. Bursten, A. H. Cowley, B. E. Hanson, M. Lattman, and G. G. Stanley, "Strong Metal-to-Metal Quadruple Bonds in a Series of Five Isostructural Compounds as Indicated by Photoelectron Spectroscopy," *J. Amer. Chem. Soc.*, *102*, (1980).

M. H. Chisholm, A. H. Cowley, and M. Lattman, "A UV Photoelectron Spectroscopic Investigation of the Bonding in Some Tri-, Tetra-, and Pentacoordinated Dialkylamino Compounds of Chromium, Molybdenum, Niobium, and Tantalum," *J. Amer. Chem. Soc.*, *102*, 46 (1980).

A. H. Cowley, R. E. Davis, M. Lattman, M. McKee, and K. Remadna, "Conformation of Ligated Tris(dimethylamino)phosphine," *J. Amer. Chem. Soc.*, *101*, 5090 (1979).

A. H. Cowley, M. Lattman, and M. L. Walker, "A Photoelectron Spectroscopic-Molecular Orbital Study of SF_4 and Related Fluorosulfuranes," *J. Amer. Chem. Soc.*, *101*, 4074 (1979).

Grant active 1980-81: Robert A. Welch Foundation, Hypervalent-Transition Metal Chemistry, $20,000/year.

MAGUIRE, JOHN A. (b 1936) Professor. B.S., 1958, Birmingham Southern College, Ph.D., 1963, Northwestern University. *Physical-Inorganic Chemistry.* The stability of weak donor-acceptor complexes.

J. J. Banewicz, J A. Maguire, *P. G. Smith, *D. O. Lussky, *D. W. Sudbrink, and *D. E. Allen, "A thermodynamic investigation of the cobalt(II) bromide + acetonitrile and the cobalt(II) bromide + propionitrile systems," *J. Chem. Thermo*.

J. A. Maguire, J. J. Banewicz, and *C. L. Ragan, "A thermodynamic investigation of cobalt(II) chloride + acetonitrile," *J. Chem. Thermo. 9*, 821 (1977).

MEISTER, JOHN J. (b. 1946) Assistant Professor. B.S., 1968, Pennsylvania State University, Ph.D., 1973, California Institute of Technology. *Chemical Physics*. Properties of solutions of water soluble polymers, rheology, surface chemistry.

J. J. Meister, *Predicting the Interfacial Activity of Alkylarylsulfonates* in *Solution Chemistry of Surfactants*, K. L. Mittal, editor. Vol. 2, pp. 841-852. Plenum Press, 1979.

SOUTHWESTERN at MEMPHIS

Memphis, TN 38112

Fall 1980 ug enrollment 1059

Degrees offered BA, BS

Telephone (901) 274-1800

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5 . 2. Support staff, FTE's: Sec'y 0.25 Stockrm 1.0 Technical 0.2
3. 1980 seniors & their placement: Total 5 Grad. school 2 Industry 1 Professional schools 2 Other 0 .
4. Senior majors, average past five years: 7 .
5. Undergraduates involved in research, average past five years: Academic year 2 Summer 2
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   None.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft² 29,000
2. Instrumentation:

   NMR (Varian EM3601)
   UV-VIS (Varian Superscan 3)
   IR's (P-E 21, 521, 137)
   Amino Acid Analyser (Technicon)
   MS (CEC-21-491)
   Polarograph (PAR 174A)
   Ultracentrifuge (Spinco L)
   GC's (2 F & M 700, Loenco 160, Barber-Coleman)
   LSC (Unilux II)
   Light Scattering Photometer (Brice-Phoenix)

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 22 Computer literature search service? No Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 6 .
4. Computer facilities:

   DEC VT-100, DECWRITER; OHIO SCIENTIFIC C8P-DF/GT,
   Campus: DEC 11/70 Time Sharing System

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   About $3,000/year for supplies, travel, projects.

2. Departmental grants:

   Schering-Plough Foundation, $4,000.

3. Faculty teaching loads: Contact hours 11 Load credit for research? No
4. Sabbatical or leave support for research: Full salary for one-half year or 60% salary for full year after six years teaching. Frequency averages seven years.

FACULTY PROFILE

GILLIOM, RICHARD D. (b. 1934) Professor and Chairman. B.S., 1956, Southwestern At Memphis. Ph.D., 1960, Massachusetts Institute of Technology. Organic Chemistry. Drug Design, computational chemistry, reaction mechanisms.

Nine publications, 1976-1980.

R. D. Gilliom, "Re-evaluation of the BEBO Method", J. Chem. Phys., 65, 5027 (1976).

R. D. Gilliom, T. R. Bosin, P. Chiu and Wm. P. Purcell, "Quantitative Structure-Activity Relationships of Biologically Active Indole, 1-Methylindole, and Benzo[b]thiophene Derivatives", Eur. J. Med. Chem., 12, 183(1977).

R. D. Gilliom, Wm. P. Purcell and T. R. Bosin, "Sequential Simplex Optimization Applied to Drug Design in the Indole, 1-Methylindole, and Benzo[b]thiophene Series", Eur. J. Med. Chem., 12, 187(1977).

R. D. Gilliom, "Activation Energies from Bond Engergies. A Modification", J. Am. Chem. Soc., 99, 8399(1977).

R. D. Gilliom, "SHOCOR", Central Program Exchange, The Polytechnic, Wolverhampton, ENGLAND, 1979.

Grant active 1976-present: Molecular Design, International, $70,760. Design and Synthesis of Biologically Active Compounds.

GILOW, HELMUTH M. (b. 1933) Professor. B.A., 1955, Wartburg College. M.S., 1957, Ph.D., 1959, State University of Iowa. Organic Chemistry. Electrophilic Halogenation of aromatic systems and [2 + 2]photocycloaddition reactions.

G. Jones, II, H. M. Gilow and J. Lowe, "Regioselective Photoaddition of Pyrroles and Aliphatic Carbonyl Compounds. A New Synthesis of 3(4)-Substituted Pyrroles", J. Org. Chem., 44, 2949(1979)

H. M. Gilow, "The Synthesis of Some Unreported Sulfanilamide Derivatives: A Laboratory in Organic Chemistry", J. Chem. Ed., 56, 419(1979).

H. M. Gilow, "Substituent Effects in Electrophilic Aromatic Substitution: A Laboratory in Organic Chemistry", J. Chem. Ed., 54, 450(1977).

Grant active 1980-1981: Research Corporation Cottrell College Science Grant, $7,000, "[2 + 2]Photocycloaddition Reactions of Carbonyl Compounds and Heterocyclic Systems-Synthetic Applications".

JETER, DAVID Y. (b. 1946) Associate Professor. B.S., 1968, East Texas State University. Ph.D., 1971, University of North Carolina, Chapel Hill. Inorganic Chemistry. Coordination Chemistry; Synthesis and characterization of five-coordinate copper(II) complexes.

LYONS, HAROLD. (b. 1919) Professor. B.S., 1945, City College of New York. M.S., 1949, Oklahoma State University. Ph.D., 1951, Oklahoma State University. Analytical Biochemistry. Biochemistry of Glycosaminoglycans and Glycoproteins, analytical toxicology, polarography of proteins.

MORTIMER, ROBERT G. (b. 1933) Associate Professor. B.S., 1958, M.S., 1959, Utah State University. Ph.D., 1963, California Institute of Technology. Physical and Theoretical Chemistry. Statistical mechanics, nonequilibrium thermodynamics, transport processes in liquids.

R. G. Mortimer, Mathematics for Physical Chemistry, Macmillan Publishing Co., New York, 1981.

R. G. Mortimer and Henry Eyring, "Elementary Transition State Theory of the Soret and Dufour Effects," Proc. Nat. Acad. Sci., 77, 1728(1980).

R. G. Mortimer and *B. C. Hicks, "Experimental Study of the Temperature Dependence of Multicomponent Isothermal Diffusion Coefficients", J. Phys. Chem., 80, 1376(1976).

SWARTHMORE COLLEGE
Swarthmore, PA 19081

Fall 1980 ug enrollment 1316
Degrees offered B.A.
Telephone (215) 447-7000

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 6 . 2. Support staff, FTE's: Sec'y 0.75 Stockrm 1 Technical 2
3. 1980 seniors & their placement: Total 15 Grad. school 3 Industry 2 Professional schools 3 Other 7 .
4. Senior majors, average past five years: 11 .
5. Undergraduates involved in research, average past five years:
   Academic year 7 Summer 5
6. Master's program? No Master's degrees conferred, average past five years: None
7. National honors, undergraduate or senior majors, past five years:
   1977 - Mark Bernstein, NSF graduate fellowship
   1978 - Charles Olson & Susan Riblett, NSF graduate fellowships
   1979 - Alexander Harris & Elizabeth McCord, NSF graduate fellowships

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 18,000
2. Instrumentation:

   IR Spectrometers: P-E 337 and 710B
   NMR Spectrometer: Hitachi R20-B
   UV-Vis Near IR: P-E 323
   Fluorescence Spectrometer: P-E 512
   UV-Vis: Gilford 250
   GC: P-E 990
   Stopped-Flow: Durrum
   MS: Varian EM-600
   Liquid Scintillation Counter: Beckman LS-1000
   X-Ray Diffraction Unit: Norelco
3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 58 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? Yes Standing orders for review series and annual reviews (past five years) 46 .

4. Computer facilities:
   On campus: IBM 1130; 7 IBM 5100's; DEC PDP 11-40; 2 Commodore PET's.
   Off campus: tie-in to IBM 370/168 in Philadelphia.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   Approximately $3,600/year; also chemicals, glassware, supplies.

2. Departmental grants:

   Dreyfus Lectures by Distinguished Scholars, $8,000; NSF-URP (w/Math & Physics), Chemistry share = $4,000; Scott Paper Co., $1,500; NSF-ISEP (Fall 1980), $9000.

3. Faculty teaching loads: Contact hours 12 Load credit for research? Yes, some

4. Sabbatical or leave support for research:

   Full salary for one semester every 4th year.

FEHNEL, EDWARD A. (b. 1922). Professor. B.S., 1943, M.S. 1944, Ph.D. 1946, Lehigh University. Organic chemistry. Synthetic organic chemistry, stereochemical aspects of thermal and photochemical cycloaddition reactions of certain high strained ring systems and the application of such reactions to stereoselective synthesis.
E.A. Fehnel and Frances C. Brokaw,* Photocycloaddition Reactions of Norbornadiene and Quadricyclane with p-Benzoquinone. J. Org. Chem., 45, 578-582 (1980).

HAMMONS, JAMES H. (b 1934). Professor and Chairman. B.A., 1956, Amherst College, M.A., 1958 and Ph.D., 1962 , Johns Hopkins University. Organic chemistry. Electron spin resonance spectroscopy of organic radicals in solution; nonbenzenoid aromatic and antiaromatic radicals and radical ions.
J.H. Hammons, C.T. Kresge,* and L.A. Paquette. An Electron Spin Resonance Study of the Radical Anions of Two Dimethylcyclooctatetraenes, J. Am. Chem. Soc., 98, 8172 (1976).
J.H. Hammons, M. Bernstein* and R.J. Myers. Electron Spin Resonance Study of the Radical Anions of Substituted Cyclooctatetraenes. The Effects of Jahn-Teller Distortions and Vibronic Mixing, J. Phys. Chem., 83, 2034-2040 (1979).
J.H. Hammons and M. Geoffroy. Structural Information from Liquid- and Solid-Phase ESR. The Example of Triphenyl-Substituted Radicals $(C_6H_5)A\cdot$ of Group IV Elements, J. Chem. Ed., in Press (scheduled for January 1981).

HEMPEL, JUDITH C. (b. 1941). Assistant Professor. B.A., 1962, Ph.D., 1967, University of Texas at Austin. Physical chemistry. Correlations of the structure of chemical systems with their electronic and magnetic properties, study of transition metal complexes by means of polarized absorption, emission, and electron spin resonance spectroscopy, effects of trigonal distortions on spin mixed ground states of iron complexes.
J.C. Hempel, Trigonal Ligand Field and Zero Field Splitting Diagrams for the d^5 Configuration, J. Chem. Phys., 64, 4307 (1976).
J.C. Hempel, R.A. Palmer, and M.C.-L. Yang. The Electronic Structure of Tris(Octamethylpyrophosphoramide)Manganese(II) Ion. Electronic Absorption, Emission, and Excitation Spectra of $Mn(OMPA)_3 (Cl)_4)_2$, J. Chem. Phys., 64, 4314 (1976).
R.A. Palmer, M.C.-L. Yang, and J.C. Hempel, The Electronic Structure of Tris-(Ethylenediamine)Manganese(II) Ion, Inorg. Chem., 17, 1200 (1978).
J.C. Hempel, Applications of Group Theory in the Interpretation of Polarized Absorption and ESR Studies of Transition Metal Systems, In Recent Advances in Group Theory and Their Application to Spectroscopy, Plenum, 483-536, 1979.
J.C. Hempel and M.E. Miller,* Trigonal Symmetry, Distorted Trigonal Prismatic and Trigonal Bipyramidal Geometries of D_h Configurations, J. Chem. Phys., in press.
Grant Active: ACS - Petroleum Research Fund Grant, 1979-81, $13,000.

KAHLER, CAROL C. (b. 1953). Assistant Professor. S.B., 1975, University of Chicago, M.S., 1977, and Ph.D., 1980, University of California at Berkeley. Physical Chemistry. Crossed molecular beam studies of chemiluminescent reactions, specifically, the decomposition of 1,2 dioxetanes to determine effect of various energy modes (e.g., translational vs. internal) on reaction rate and branching ratio.

KAHLER, CAROL C., cont'd

Grant Active: NSF, 2- and 4-Year College Research Instrumentation Program, 1980-81, $25,000.

THOMPSON, PETER T. (b. 1929). Professor, A.B., 1951, Johns Hopkins University; Ph.D., 1956, University of Pittsburgh. Physical Chemistry. Thermodynamic properties of both aqueous and non-aqueous solutions, especially interactions between solute molecules in such systems; heats of mixing of electrolytes; viscosity studies in solutions of high dielectric constant solvent; solution calorimetry.
R.H. Wood, P.T. Thompson, and T.H. Lilley, Rapidly Converging Activity Expansions for Representing the Thermodynamic Properties of Fluid Systems: Gases, Nonelectrolyte Solutions, Weak and Strong Electrolyte Solutions, J. Chem. Soc., Faraday Trans. (I), 74, 1301 (1978).
B.Y. Okamoto, R.H. Wood, and P.T. Thompson, Freezing Points of Aqueous Alcohols. Free Energy of Interaction of the CHOH, CH_2, CONH, and C=C Functional Groups with Each Other in Dilute Aqueous Solutions. J. Chem. Soc., Faraday Trans. (I), 74, 1990 (1978).
R.H. Wood, P.T. Thompson, and T.H. Lilley, Improvements in the Representation of the Thermodynamic Properties of Fluids, In Fluids and Fluid Mixtures, I.P.C. Scientific Technology Press, Guilford, U.K. 103 (1979).
A. Harris,* P.T. Thompson and R.H. Wood, Freezing Points and Enthalpies of Dilution of Aqueous Formic, Acetic, Propionic and Butyric Acids. Free Energies and Enthalpies of Solute-Solute Interactions, J. Soln. Chem., 9, 305 (1980).
P.T. Thompson, M. Durbano, J.L. Turner,* and R.H. Wood. Viscosities of Solutions of Electrolytes and Non-Electrolytes in N-Methylacetamide (NMA) at 35° and 55°C. J. Soln. Chem., 9, xxx (1980).

VOET, JUDITH G. (b. 1941). Assistant Professor. B.S., 1963, Antioch College; Ph.D., 1969, Brandeis University. Biochemistry. (1) Mechanisms of enzyme action as deduced from chemical modification studies: Conversion of the cysteine residue at the active site of glyceraldehyde-3-phosphatedehydrogenase to a serine residue. (2) The role of electrostatic potential in the control of enzyme behavior: the effect of ionic strength, temperature and dielectric constant on the catalytic activity of glucose oxidase.
D.J.T. Porter, J.G. Voet and H.J. Bright, Mechanistic Features of the D-Amino acid Oxidase Reactions Studied by Double Stopped-Flow Spectrophotometry, J. Biol. Chem., 252, 4464 (1977).
J.P. Klinman, H. Humphries, and J.G. Voet, Deduction of Kinetic Mechanism in MultisubstrateEnzyme Reactions from Tritium Isotope Effects: Application to Dopamine-β-Hydroxylase, J. Biol. Chem., 255, xxx (1980).
Grants active: ACS - Petroleum Research Fund Grant, 1979-81, $13,000; Research Corporation Grant, 1979-81, $13,000.

TRINITY COLLEGE
Hartford, CT 06106

Fall 1980 ug enrollment 1650
Degrees offered B.S., B.A.
Telephone 203/527-3151

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 6 . 2. Support staff, FTE's: Sec'y 1 Stockrm 0 Technical 1
3. 1980 seniors & their placement: Total 19 Grad. school 6 Industry 5 Professional schools 3 Other 5 .
4. Senior majors, average past five years: 16 .
5. Undergraduates involved in research, average past five years:
   Academic year 8 Summer 5
6. Master's program? NO Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:

   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 19,300
2. Instrumentation:
   - MS (Dupont 21-491)
   - NMR (Varian T-60)
   - IR (Beckman IR-12)
   - UV-Vis (Beckman DK-2A)
   - GC (Perkin-Elmer 881)
   - HPLC (LDC)
   - AA (G.C.A./McPherson)
   - AES (Jarrell-Ash)
   - Light Scattering Photometer (Virtis)
   - Polarographic Analyzer (PAR-174)
3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 46 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? Yes Standing orders for review series and annual reviews (past five years) 20 .
4. Computer facilities: Departmental; minicomputer, DEC-LSI/11. Campus; PDP/11, multiuser, Basic and Fortran, Dartmouth and Yale time-sharing.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Approx. $7000/year for chemicals and equipment. All expenses involved in the presentation of a paper at a meeting.
2. Departmental grants: DuPont College Science Grant - $7,000
3. Faculty teaching loads: Contact hours 12 Load credit for research? none .
4. Sabbatical or leave support for research: Sabbatical leave granted every seventh year at 50% salary full year, full salary for 1/2 year.

FACULTY PROFILE

BOBKO, EDWARD (b. 1925) Professor, B.S., 1949, Western Reserve University, Ph.D., 1952, Northwestern University. Organic Chemistry. Correlation analysis, molecular orbital theory, organic synthesis.

DEPHILLIPS, HENRY A., JR. (b. 1937) Professor and Chairman, B.S., 1959, Fordham University, Ph.D., 1965, Northwestern University. Physical Biochemistry. Structure-function relationships in biological macromolecules; activity-composition correlations on metal surfaces.

HEEREN, JAMES K. (b. 1929), Associate Professor, B.S. in Chemistry, 1951, Tufts, M.S., 1952, Tufts, Ph.D. 1960, MIT. Organic Chemistry. Organophosphorus compounds and organometallic compounds as they relate to organic synthesis.

HENDERSON, DAVID E. (b. 1946) Assistant Professor, B.S., 1968, St. Andrews Presbyterian College, Ph.D., 1975, University of Massachusetts, Amherst. Analytical Chemistry. Chromatographic separations (GC and HPLC) of metal complexes for analysis and speciation of metals, thermogravimetric analysis, and minicomputer applications in chemical instrumentation.

D.E. Henderson, R. Chaffee and F.P. Novak, "The Use of Polar Modifiers and Glass-lined Columns for HPLC Separation of Divalent Metal Dithizonates," accepted for publication, J. Chrom. Sci., 1980.

P.C. Uden, D.E. Henderson, F. DiSanzo, R.J. Lloyd and T. Tetu, "Applications of Dexsil and Other Gas Chromatographic Porous Layer Open Tubular Columns to Metal Compound Separations and Pyrolysis," J. Chromatography, 196, 403 (1980).

Grant Active 1978-80: Research Corporation, Cottrell College Science Grant, $12,000, Piezoelectric Crystal Thermogravimetric Analyzer.

Grant Active 1980-82: ACS-PRF, $13,000 Stabilization of Metal Complexes During HPLC Separations.

MOYER, RALPH O., JR. (b. 1936) Associate Professor, B.S., 1957, Southeastern Massachusetts University, M.S., 1963, University of Toledo, Ph.D., 1969, University of Connecticut. Inorganic Chemistry. Transition Metal Hydrides: synthesis, structure determination, magnetic and electrical property measurements.

R.O. Moyer, R. Lindsay, "The Preparation, Structure and Properties of Eu_2IrH_5," J. Less Common Metals, 80, p. 57 (1980).

R.O. Moyer, R. Lindsay, D. Marks*, "Results of Reactions Designed to Produce Ternary Hydrides of Some Rarer Platinum Metals with Europium or Ytterbium," Advances in Chemistry Series, No.167, American Chemical Society, Washington, D.C., 1978, pp. 366-381.

R. Lindsay, R.O. Moyer, J.S. Thompson*, D. Kuhn*, "Preparation, Structure and Properties of Yb_2RuH_6," Inorg. Chem., 15, 3050 (1976).

SMELLIE, ROBERT H., JR., (b. 1920) Professor, B.S., 1942, M.S., 1944, Trinity College, Ph.D., 1951, Columbia University. Physical Chemistry. Transition metal combustion catalysts, properties of metal oxide suspensions in nonaqueous media, radio frequency spectrometry.

TRINITY UNIVERSITY
San Antonio, Texas 78284

Fall 1980 ug enrollment 2,551
Degrees offered B.S., B.A., M.S..
Telephone 512-736-7523

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5.5. 2. Support staff, FTE's: Sec'y 5/6 Stockrm 1/2 Technical 1/2
3. 1980 seniors & their placement: Total 9 Grad. school 2 Industry - Professional schools 7 Other -.
4. Senior majors, average past five years: 6.
5. Undergraduates involved in research, average past five years: Academic year 8 Summer 4
6. Master's program? yes Master's degrees conferred, average past five years: one
7. National honors, undergraduate or senior majors, past five years:

None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft² 25,000
2. Instrumentation:

NMR-60MHz (Varian T-60)	Parr Medium Pressure Hydrogenator
MS (Varian EM600)	Fluorescence (Perkin-Elmer MPF-44B)
UV-VIS (Cary 118C, Beckman DB-G and DU-2, & Perkin-Elmer Hitachi)	X-ray (Norelco, Picker & Supper-Weissenberg)
IR (P-E 287, 337)	HPLC (Waters, high pressure pump)
GC (Varian 1200, 2400, 920)	

3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 45 Computer literature search service? yes Separate chemistry or science library? no Librarian? no Standing orders for review series and annual reviews (past five years) 20.

4. Computer facilities: University IBM 3031. Department: Datapoint minicomputer with plotter, A-D converter.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Approximately $5,500/yr. for faculty through University grants. $12,000/yr. for chemicals and glassware; $4,000/yr. for equip

2. Departmental grants: NSF (Equipment), $25,000.

3. Faculty teaching loads: Contact hours 12 Load credit for research? no.

4. Sabbatical or leave support for research:
One faculty member on academic leave for fall semester, 1980.

FACULTY PROFILE

BURKE, JOHN A. (b. 1936) Professor and Dean of the Divison of Sciences, Mathematics and Engineering. B.S., 1959, Texas Tech College, M.S., 1961, Ohio State University, Ph.D., 1963, Ohio State University, Academic Leave, 1979, University of Illinois. Inorganic Chemistry. Coordination Chemistry.

CLYDE, DALE, D. (b. 1938) Associate Professor. B.S., 1960, Hastings College, Ph.D., 1966 Iowa State University, Analytical Chemistry. Analysis of inorganic and physical systems, mass spectroscopy.

D. D. Clyde and *M. A. Warner, Spectrophotometric Determination of Cyanide by Use of Aqueous Potassium Iodide and Mercury (II) Iodide, Analyst, 103, 648 (1978).

D. D. Clyde, *J. Bertini, *R. Dmochowki, and *H. Koop, "Vitamin A and C Content of Coriandrum Sativm and the Variations in the Loss of the Latter with Various Methods of Food Preparation and Preservation", Qualitas Platarium, vol. 28, 317 (1979).

D. D. Clyde, "Titration of Organic Compounds as Very Weak Acids with Lithium [1,1, 1-Trimethyl-N-(trimethylsilyl)] silanamide", Analytical Chemistry, vol. 52, 1308 (1980).

KURTIN, WILLIAM E. (b. 1943) Associate Professor. B.A., 1965, St. Thomas University, Ph.D., 1969, Texas Tech University, Biochemistry. Photochemistry and spectroscopy of biomolecules; photodynamic action; phototherapy of neonatal jaundice.

J.A. Zuclich and W.E. Kurtin, Oxygen Dependence of Near-Ultraviolet Induced Corneal Damage, Photochem. Photobiol, 25, 133 (1977).

W.E. Kurtin and J.A. Zuclich, Action Spectrum for Oxygen-Dependent Near-Ultraviolet Induced Corneal Damage, Photochem. Photobiol., 27, 329 (1978).

W.E. Kurtin, Spectroscopy and Photochemistry of Bilirubin Photoproducts I. Methylvinylmaleimide, Photochem. Photobiol., 27, 503 (1978).

MILLS, NANCY S. (b. 1950) Assistant Professor. B.A. 1972, Grinnel College, Ph.D., 1976, University of Arizona. Organic Chemistry. Preparation and characterization of cross-conjugated poly-anions and cations, questions of aromaticity, including Y-Aromaticity, trimethylenemethane transition metal complex, electrochemistry as a route to cross-conjugated ions.

J.J. Bahl, R.B. Bates, W.A. Beavers, and N.S. Mills, "Reactions of Delocalized Dicarbanions with Dihalides", J. Org. Chem., 41, 1620 (1976).

R.B. Bates, N.S. Mills, W.A. Beavers, and B. Gordon, III, "Reactions of 2-Methyleneallyl Dianion with Aldehydes, Ketones, Epoxides, and Allyl Halides", J. Org. Chem., 44, 3800 (1979).

N.S. Mills, R.B. Bates, B.Gordon, III, P.C. Kelly, and J.V. Rund, "Reactions of Dianions with Nitriles", J. Org. Chem., 45, 168 (1980).

Grants Active 1980-81: Robert A. Welch Foundation, $22,000.

PLUMMER, BENJAMIN F. (b. 1936) Professor, Chairman. B.S., 1958, Iowa State University, Ph.D., 1962, The Ohio State University. Physical-Organic Chemistry. Synthetic and Mechanistic Organic Photochemistry. Spectroscopy.

Six publications, 1976-1980.

B.F. Plummer, D.M. Chihal, *D. D'Orsogna, and *B.M. Blenkarn, Synthesis and Reactions of 7, 10-Methano-7,8,9,10,11,11-hexachloro-7, 10-dihydrofluoranthene, J. Org. Chem., 42, 4092 (1977).

B. F. Plummer, Convenient, Degassable, Resuable Tubes for Photo-Chemistry, J. Chem. Ed., 55, 719 (1978).

B.F. Plummer, L.J. Scott, *T.E. O'Boyle, Spin Orbital Effects on the Excited State Cycloaddition of 5-Acetoacenaphthylene to Cyclopentadiene, J. Org. Chem., 44, 514 (1979).

B.F. Plummer, M.J. Hopkinson, W.W. Schloman, Jr., E. Wenkert, and M. Raju, Multipathway Photodimerization of 2-Methylthianaphthene 1, 1-Dioxide, J. Amer. Chem. So., 101, 2157 (1979).

B.F. Plummer, M.J. Hoplinson, J.H. Zoeller, Dual Wavelength Fluorescence from Acenaphthylene and Derivatives in Fluid Media, J. Amer. Chem. Soc., 101, 6779 (1979).

Grants Active 1980-81: Robert A. Welch Foundation, $17,000.

SCHILLING, JESSE W. (b. 1939) Associate Professor. B.S., 1960, Juniata College, M.S., 1963, Yale University, Ph.D., 1968, University of Michigan, Physical Chemistry. Laboratory computing, computer graphics, chemical data management, chemical education.

J.W. Schilling, "A Device for Demonstrating Microprocessor Interfacing', J. Chem. Ed. 56, A 104, (1979).

UNION COLLEGE
Schenectady, New York 12308

Fall 1980 ug enrollment 2000
Degrees offered BS, MS
Telephone 518-370-6249

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 10 2. Support staff, FTE's: Sec'y 1 Stockrm 1 Technical 0
3. 1980 seniors & their placement: Total 7 Grad. school 2 Industry 3 Professional schools 1 Other 1 .
4. Senior majors, average past five years: 15 .
5. Undergraduates involved in research, average past five years:
   Academic year 12 Summer 2
6. Master's program? Yes Master's degrees conferred, average past five years: 1.5
7. National honors, undergraduate or senior majors, past five years:
   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 15,500
2. Instrumentation:
   HPLC (Varian 5020)
   GC-MS (Hewlett Packard 5992)
   Polarimeter (Rudolph Research Autopol II)
   UV-Vis (Cary 118, Cary 14, P & E-202)
   NMR (P & E R24A)
   Fluorescence (P & E MPF 2A)
   GC (P & E 900 and 3 others)
   IR (P & E 237, 727)
   DSC (P & E-DSC 1B)
   Stopped Flow (Aminco Morrow)

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 46 Computer literature search service? No Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 19 .

4. Computer facilities:
   Department Altair 8800 plus Apple on order
   College Burroughs 6805

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: $500. per person per year for chemicals; $7000-10,000/year for equipment; college grants of $1,000 per person per year available
2. Departmental grants:
   DuPont $7000

3. Faculty teaching loads: Contact hours 9* Load credit for research? No
   *Trimester
4. Sabbatical or leave support for research:
   Full pay for 1/2 year, half pay for full year, averaging every 7th year. Mellon grant money available internally for leave or course reductions.

FACULTY PROFILE

ANDERSON, JANET S. (b. 1950) Assistant Professor. B.S., 1972, College of William & Mary, Ph.D., 1976, University of Wisconsin-Madison. Physical Chemistry. Monte Carlo simulation of protein folding; conformational analysis of small peptide molecules.

J.S. Anderson and W.E. Vaughan "Comparisons of Model Calculations on the Dipolar Autocorrelation Function" J. Chem. Phys. 64, 4034 (1976).

J.S. Anderson, W.E. Vaughan, L.C. Rosenthal, and H.L. Strauss "Comment on Rotational Correlation in Chloroform" J. Chem. Phys. 65 2481 (1976).

J.S. Anderson and W.E. Vaughan "Dielectric Relaxation of Rodlike Poly(n-hexyl isocyanate) in Polar Solvents" 1976 Annual Report on the Conference on Electrical Insulation and Dielectric Phenomena (1977).

J.S. Anderson and H.A. Scheraga "Conformational Energy Calculations on the Contraceptive Tetrapeptide, H-Thr-Pro-Arg-Lys-OH" Macromolecules, 11, 812, (1978).

Grant Active: Research Corporation, 1980-81, $4,700. "Conformational Energy Calculations of the Binding of Cations to Valinomycin."

HAYES, DAVID M. (b. 1943) Assistant Professor. B.S., 1966, Massachusetts Institute of Technology, Ph.D., 1971, Cornell University. Physical Chemistry. Quantum mechanical calculations of the electronic structure of molecules. Theoretical determination of the mechanisms and energetics of chemical reactions, especially reactions of biochemical significance.

Eight publications, 1976-1980

D.M. Hayes, G.L. Kenyon and P.A. Kollman, "Theoretical Calculations of the Hydrolysis Energies of Some 'High Energy' Molecules II. A Survey of Some Biologically Important Hydrolytic Reactions" J. Amer. Chem. Soc. 100, 4331 (1978).

D.M. Hayes, S. Nelson, W. Garland, and P.A. Kollman, "A Molecular Orbital Study of the Benzene Oxide-Oxepin Valence Isomerization" J. Amer. Chem. Soc. 102 (1980).

P.A. Kollman and D.M. Hayes "A Comparison of the Energetics of Proton Transfer in the Serine and Cysteine Charge Relay Systems and the Role of the Protein Electrostatic Potential on the Proton Transfer Energetics" The Jerusalem Symposia on Quantum Chemistry and Biochemistry, April 1979.

*P. Felker, D. Hayes, and L.A. Hull "The Calculation of Monocyclic Molecular Structures Using MINDO/3" Theor. Chim. Acta 55, 293 (1980).

*M. Fraser and D.M. Hayes, "A Molecular Geometry Optimization Program Using CNINDO" Quantum Chemistry Program Exchange 12, 389 (1980).

Grant Active: ACS-PRFB, 1979-80, $4,400. "Alkyne-Ozone Reactions."

HULL, LESLIE A. (b. 1943) Associate Professor. B.S., 1965, University of Rochester, Ph.D., 1971, Harvard University. Organic Chemistry. Physical organic chemistry, oxygen and ozone chemistry, radical reactions.

Seven publications, 1976-1980.

*S. Carr, *A. Fritzson, L.A. Hull, T.C. Werner, and G. Williams "Interfacing of an NMR Spectrometer to a Low Cost Microcomputer-based Data Acquisition System" in Microcomputer Design and Applications, S.C. Lee, Editor, Academic Press, pg. 213-226, 1977.

HULL, LESLIE A. cont'd

L.A. Hull "MINDO/3 Calculations on the Stability of Criegee Carbonyl Oxides" J. Org. Chem. 43, 2780 (1978).

*P.A. Felker, D. Hayes, and L.A. Hull "The Calculation of Monocyclic Molecular Structures Using MINDO/3" Theor. Chim. Acta 55, 293 (1980).

H. Birecka, M. Frohlich, L.A. Hull, and *M. Chaskes "Pyrrolizidine Alkaloids of Heliotropium from Mexico and Adjacent USA" Phytochemistry 19, 421 (1980).

R. Kuntz, W. Lonneman, G. Namie, and L.A. Hull "Rapid Determination of Aldehydes in Air Analysis" Accepted in Analytical Letters, September, 1980.

MARTIN, WILLIAM B., Jr. (b. 1923) Professor B.A., 1948, M.A., 1949, Clark University, Ph.D., 1953, Yale University. Organic Chemistry. Syntheses terpenoid resin acids, biochemistry (paramecium aurelia), syntheses of [2.2] paracyclophane systems, electron-spin-resonance studies, hydrothermal growth of single quartz crystals, syntheses and kinetic studies of sterically hindered esters.

F. Gerson, W. Martin and C. Wydler "π-Spin Distribution in the Radical Anions of [2,2]-Paracyclophane and Some of Its Symetric Benzo-Derivatives" Jour. Amer. Chem. Soc. 98, 1318 (1976).

F. Gerson, W. Martin and C. Wydler "The Structure of the Ion Pairs Formed by the Radical Anion of [2,2]-Paracyclophane and the Potassium Cation" Helv. Chim. Acta 59, 1365 (1976).

F. Gerson, W. Martin, G. Plattner, F. Sondheimer, and H. Wong "ESR Spectra and Structures of Radical Anions in the Debenzo [a,e] cyclooctene Series" Helv. Chim. Acta 59, 2038 (1976).

J. Bruhin, F. Gerson, W. Martin, and C. Wydler "π-Spin Distribution in the Radical Anion of Benzo [2,2]-paracyclophane and Its Relation to Those in The Radical Anions of [2,2] (1,4) Naphthalenophanes" Helv. Chim. Acta 60, 1915 (1977).

F. Gerson, W. Martin, and C. Wydler "The Radical Anion of 1,2-Diphenylcyclopentene" Helv. Chim. Acta 62, 2517 (1979).

QUAAL, KAREN S. (b. 1950) Assistant Professor. B.S., 1972, State University of New York at Albany, Ph.D., 1978, State University of New York at Albany. Organic Chemistry. New methods for analysis of estrogen in urine and its applications towards fertility awareness.

J.C. Carnahan, Jr., W.D. Closson, J.R. Ganson, D.A. Juckett and K.S. Quaal "On The Mechanism of Cleavage of Aryl Alkanesulfonates by Electron Donors" J. Amer. Chem. Soc., 98, 2526 (1976).

K.S. Quaal, Sungchul Ji, Young M. Kim, W.D. Closson, and J.A. Zubieta, "Substituent Cleavage by Sodium Anthracene and Electrochemically by Vitreous Carbon Electrode" J. Org. Chem. 43, 1311 (1978).

SCAIFE, CHARLES W.J. (b. 1938) Associate Professor. B.A., 1959, Ph.D., 1966, Cornell University. Inorganic Chemistry. Borazine chemistry, hydration of oxyanions.

S.J. Baum and C.W.J. Scaife Chemistry - A Life Science Approach, 2nd Edition, Macmillan Publishing Company, 1980.

C.W.J. Scaife and R.G. Wilkins "Kinetics of the Reduction of Hexacyanoferrate III Ion by Dithionite Ion" Inorg. Chem. 19, 3244, (1980).

SCHAEFER, ROBERT W. (b. 1927) Associate Professor and Chairman. B.S., 1949, Siena College, M.S., 1951, Union College. Analytical Chemistry. Ion specific electrodes.

SHEFFER, HOWARD E. (b. 1918) Professor. B.S., 1939, Union College, M.S., 1940, Rensselaer Polytechnic Institute, Ph.D., 1943, Cornell University. Organic and Polymer Chemistry. Synthesis of heterocyclic compounds. Cationic Polymerization. Consultant - high temperature electrical insulation.

*G. Alsofrom, *H. Grossberg, and H.E. Sheffer, "A New Synthesis of S-Triazines" J. Heterocyclic Chem. 13, 917 (1976).

*C. Snyder, *W. McIver, and H.E. Sheffer "Cationic Polymerization of β-Pinene and Styrene" J. Applied Polymer Sc. 21, 131 (1977).

H.E. Sheffer and M. Luhta "The Cationic Polymerization of Terpenes and Styrenes" Finn. Chem. Lett. 28 (1977).

H.E. Sheffer, A. Sivoi[illegible], and J. Savelainen, "The Preparation and Characterization of Styrene-β-Pinene Polymers" Finn. Chem. Lett. 122 (1978).

SOWA, JOHN R. (b. 1934) Associate Professor. B.S., 1956, University of Notre Dame, Ph.D., 1964, University of Pennsylvania. Organic Chemistry. Synthesis and Mechanisms involving organo-phosphorous, silane, sulfur chemistry, micellar reactions, polymer chemistry, diazonium salts, elimination reactions and NMR spectroscopy.

J. Epstein, J.J. Kaminski, N. Bodor, R. Enever, J. Sowa, and T. Higuchi, "Micellar Acceleration of Organophosphate Hydrolysis by Hydroximinomethylpyridinium Type Surfactants" J. Org. Chem. 43, 2816 (1978).

WEICK, CHARLES F. (b. 1931) Professor. B.S., 1953, Mt. Union College, Ph.D., 1959, University of Rochester, Inorganic and Radiochemistry. Synthesis, kinetics, optical activity of metal complexes.

WERNER, THOMAS C. (b. 1942) Associate Professor. B.S., 1964, Juniata College, Ph.D., 1969, M.I.T. Analytical Chemistry. Fluorescence Properties of Organic Compounds

Six publications, 1976-1980.

T.C. Werner "Use of Fluorescence to Study Structures and Solution Phenomena in Electronically Excited States" Modern Fluorescence Spectroscopy, Vol II Chapter 7, E.L. Wehry, ed., P. Plenum Press (1976).

T.C. Werner "Heavy Atom Effects on Fluorescence of Organic Molecules" Fluorescence News, R. Passwater, ed., American Instrument Company, Vol 9, No. 4, March 1976.

*S. Carr, *A. Fritzson, L.A. Hull, T.C. Werner, and G. Williams "Interfacing of a Nuclear Magnetic Resonance Spectrometer to a Low Cost Microcomputer-Based Data Acquisition System" in Microcomputer Design and Applications, S.C. Lee, ed., Academic Press, 213-226 (1977).

*W. Hawkins, *J. Facci, *R. Torrisi, *T. Trembath, and T.C. Werner "Substituent Effects on the Fluorescence Properties of Aromatic Esters of 9-Anthroic Acid" J. Phys. Chem. 82, 298 (1978).

T.C. Werner and L.S. Forster, "The Fluorescence of Tryptophyl Peptides" Photochem. and Photobiol. 29, 905 (1979).

Grant Active: ACS-PRFB, 1979-80, $5,000. "Fluorescence of Anthroate Esters."

VASSAR COLLEGE

Poughkeepsie, NY 12601

Fall 1980 ug enrollment 2250

Degrees offered B.A. and M.A.

Telephone (914) 452-7000 x2590

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 8.66 2. Support staff, FTE's: Sec'y 0.5 Stockrm 1 Technical 2
3. 1980 seniors & their placement: Total 15 Grad. school 8 Industry ____ Professional schools 7 Other ____.
4. Senior majors, average past five years: 10 per year
5. Undergraduates involved in research, average past five years: Academic year 10 Summer 2
6. Master's program? yes Master's degrees conferred, average past five years: 1/yr.
7. National honors, undergraduate or senior majors, past five years: None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 28,000
2. Instrumentation:

IR: P-E 700, 521, 167
NMR: Varian T-60
Polarograph: Sargent III & XI
Atomic Absorption: Jarrel-Ash III
GC: Varian 3920, A90-Ps, 920 & Carle

MS: Varian EM-600
UV: 2 Cary 14, Beckman D.B.
Dipole Meter: WTW, DM01
Refractometer: Bellingham & Stanley
Electroscan: Beckman

3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 50 Computer literature search service? no Separate chemistry or science library? no Librarian? N/A Standing orders for review series and annual reviews (past five years) 30.

4. Computer facilities: Department: 4051 Tektronix; College: IBM 370/125

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: About $4,000 per year for chemicals, project grants and travel expenses.
2. Departmental grants: $22,700 NSF

3. Faculty teaching loads: Contact hours 10 Load credit for research? no.

4. Sabbatical or leave support for research: Full year at full pay every 7th year or half-year at full pay after three years.

FACULTY PROFILE

BECK, CURT W. (b. 1927), Professor on the Matthew Vassar, Jr. Chair. B.S., 1951, Tufts University; Ph.D., Massachusetts Institute of Technology. Organic Chemistry. Organic archaeological chemistry, provenance of archaeological amber artifacts, analysis of resins, fats, oil, tars, etc. in archaeological contexts.

C. W. Beck, "Analysis of an 'Assyrian' Amber Statuette", in O.W. Muscarella: "Unexcavated Objects and Ancient Near Eastern Art: Addenda", Monographic Journals of the Near East, Occasional Papers, Vol. 1, No. 1, October 1979, pp. 15-19.

C.W. Beck and *L. Moray, "Organic Residues" in D.S. Whitcomb and J.H. Johnson, Quseir al-Qadim 1978: Preliminary Report, American Research Center in Egypt, Cairo, 1979, pp. 253-356.

C.W. Beck, *J. Greenlie, *M.P. Diamond, *A.M. Macchiarulo, *A.A. Hannenberg, and *M.S. Hauck, "The Chemical Identification of Baltic Amber at the Celtic Oppidum Stare Hradisko in Moravia", Journal of Archaeological Science, 5, 343-354 (1978).

L.Y. Beck and C.W. Beck, "WI-RI-ZA WOOL on Linear B Tablets of Perfume Ingredients", American Journal of Archaeology, 82, 213-215 (1978).

DEITERS, JOAN A. (b. 1934) Associate Professor. B.A., 1963, College of Mount St. Joseph, Ohio; Ph.D., 1967, University of Cincinnati, Ohio. Inorganic Chemistry. Structure of pentacoordinate phosphorus compounds, computer simulation of enzymatic phosphate hydrolysis via application of molecular mechanics calculations.

Six publications, 1976-1980.

R.O.Day, S. Husebye, J.A. Deiters, R.R. Holmes, "Crystal Structure and Absolute Configuration of (1R,3S)-(-)-trans-1-benzyl 3-methyl-1 phenylpholanium iodide. Steric Course of Base Hydrolysis, J. Am. Chem. Soc. 102, 4387 (1980).

R.R. Holmes, J.A. Deiters, and J.C. Gallucci, "Computer Simulation of Ribonuclease Action on Uridylyl-(3'-5')-adenosine", J. Am. Chem. Soc., 100, 7393 (1978).

J.A. Deiters, J.C. Gallucci, T.E. Clark, and R.R. Holmes, "Computer Simulation of Phosphorane Structures", J. Am. Chem. Soc., 99, 5461 (1977).

R.R. Holmes and J.A. Deiters, "Structural Distortions of Cyclic Phosphoranes and the Berry Exchange Coordinate. A Quantitative Description", J.Am. Chem. Soc., 99, 3318 (1977).

R.R. Holmes and J.A. Deiters, "Structural Distortions of Cyclic Phosphoranes: A Quantitative Description", J.Chem. Research (S), 92 (1977).

GOUNARIS, ANNE D. (b. 1924) Professor. A.B., 1955, Boston University; Ph.D., 1960, Radcliffe College. *Biochemistry*. Pyruvate decarboxylase studies; investigation of renin and thiol protease.

A.D. Gounaris and Maureen Schulman, "Formation of a Thiamine Artifact During Chromatography: A Single Column Procedure for the Separation of Thiamine and the Thiamine Mono-,Di-,and Triphosphate Esters", *Analytical Biochemistry*, *102*, 145 (1980).

E.S. Slater, A.D. Gounaris, and E. Haber, "Isolation of a Renal Thiol Protease that Activates Inactive Plasma Renin", *Clinical Science*, 57, 93s-96s (1979).

HILLIS, MARY O. (b. 1921) Professor. A.B., 1941, MacMurray College; M.S., 1942, University of Illinois; Ph.D., 1944, University of Illinois. *Analytical* and *Inorganic Chemistry*.

MUCCI, JOSEPH F. (b. 1929) Professor and Chairman. B.S., 1950, Central Connecticut State College; M.A., Wesleyan University, 1953; Ph.D., 1957, Yale University. *Physical* and *Theoretical Chemistry*. Quantum chemical studies involving chemical and biochemical systems; statistical mechanical studies and information theory; the chemistry of uranium fission fragments.

Seven publications, 1976-1980.

J.F. Mucci and N.H. March, "Regularities in Nuclear-Nuclear Potential Energy of Molecules at Equilibrium", *J. Chem. Phys.*,*71*, 5270 (1979).

J.F. Mucci, "On the Mathematical Form of 'Intermediate Operators' as Applied to the Hypervirial Theorem", *Lettere Al Nuovo Cimento*, *24*, 468 (1979).

J.F. Mucci and N.H. March, "Theory of the Deviation from the Ruedenberg Energy Relation for Molecules, *J. Chem. Phys.*, *71*, 1495 (1979).

J.F. Mucci, "DeBroglie's Cyclical Action Integral and the Thermodynamic Availability Function", *Annales de la Fondation Louis de Broglie*, *3*, 189 (1978).

J.F. Mucci and R.L. Stearns, "Use of Energy-Dispersive X-Ray Fluorescence Analysis in Clay Mineral Ion Exchange Studies", *Soil Science*, *123*, 264 (1977).

PARKER, LLOYD R., JR. (b. 1950) Assistant Professor. B.A., 1972, Berry College; M.S., 1974, Emory University; Ph.D., 1978, University of Houston. *Analytical Chemistry*. High-performance liquid chromatography of metal chelates; atomic absorption spectroscopy of metal chelates; optimization.

S.N. Deming and L.R. Parker, Jr., "A Review of Simplex Optimization in Analytical Chemistry", *CRC Critical Reviews in Analytical Chemistry*, *7*, 187 (1978).

A.S. Olansky, L.R. Parker, Jr., S.L. Morgan, and S.N. Deming, "Automated Development of Analytical Chemical Methods", *Anal. Chim. Acta*, *95*, 107 (1977).

TREMELLING, MICHAEL J. (b. 1945) Assistant Professor. B.A., 1968, Idaho State University; M. Phil, 1970, Ph.D., 1972, Yale University. Organic Chemistry. Heterogeneous elimination and substitution reactions and nucleophilic aromatic substitution.

Twelve publications, 1976-1980.

R.R. Bard, J.F. Bunnett, X. Creary, and M.J. Tremelling, " Major Leaving Group Effect on Chemical Events After the Group Has Left. Reactions of Acetone Enolate Ion with Halobenzenes and Related Substrates Provoked by Solvated Electrons", J. A. Chem. Soc., 102, 2852 (1980).

M.J. Tremelling, S.P. Hopper, and *E.W. Goldman, "Heterogeneous Reactions VIII. The Heterogeneous Gas/Solid Reaction of 3-Chloropropyltrimethoxysilane with Lithium, Sodium and Potassium Methoxides", J. Organometal. Chem., 191, 363 (1980).

M.J. Tremelling, S.P. Hopper, and *E.W. Goldman, "Heterogeneous Reactions VII. Further studies on the Heterogeneous Gas/Solid Reactions of Solid Alkoxide Bases with Vaporized Chloromethyldimethylhalosilanes", J. Organometal. Chem., 190, 247 (1980).

M.J. Tremelling, S.P. Hopper, and *P.C. Mendelowitz, "The Influence of Steric Factors in the E2 Reaction. Calculation of Non Bonded Interactions and Minimum Energy Trajectories for Base Approach in the E2 Reaction of Some Simple Alkyl Systems", J. Org. Chem. 44, 4770 (1979).

S.P. Hopper, M.J. Tremelling, and *E.W. Goldman, "Heterogeneous Reactions. VI. Reactions of Trimethylchlorosilane, Dimethyldichlorosilane and Chloromethyldimethylchlorosilane With Potassium Tertiary-Butoxide and Sodium Methoxide", J. Organometal. Chem., 156,331(1978).

Grant active: Research Corporation Cottrell College Science Grant, 1979-80, $6,500.

WABASH COLLEGE

Crawfordsville, IN 47933

Fall 1980 ug enrollment 790

Degrees offered AB

Telephone (317) 362-1400

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 6 . 2. Support staff, FTE's: Sec'y 1 Stockrm 1 Technical 0
3. 1980 seniors & their placement: Total 13 Grad. school 3 Industry 3 Professional schools 7 Other 0 .
4. Senior majors, average past five years: 12 .
5. Undergraduates involved in research, average past five years:
   Academic year 6 Summer 2
6. Master's program? NO Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:
   1978 - Jay W. Ponder, NSF graduate fellowship

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 22,590
2. Instrumentation:
   - MS (duPont 21-490)
   - IR (P-E 457, Beckmann 8)
   - NMR (Varian T-60)
   - UV-Vis (B-L505, Beckmann DU with Gilford Modification, GCA/McPherson 700)
   - AA (GCA/McPherson 700)
   - GC (F-M 700)
   - Aminco Stopped Flow Kinetics
   - Nestor-Faust Spinning Band Distillation column
   - Varian E-4 Electron Paramagnetic Resonance Spectrometer
3. Library resources: CA? Yes Volume indices? Yes Collected indices? No Total journal subscriptions? 30 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 9 .
4. Computer facilities: CAMPUS: PDP 11/45-RSTS/E.
   DEPARTMENT: Two PDP 11/20 with BASIC controlled on-line data acquisition.
   APPLE II with Data Acquisition Capability

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Faculty Development Fund, up to $2,500 has been awarded for individual research projects.
   Haines Research Fund, approx. $3,000/yr. for research projects.
2. Departmental grants: Lubrizol $400
3. Faculty teaching loads: Contact hours 10 Load credit for research? No .
4. Sabbatical or leave support for research:
   Faculty may apply for sabbatical leave at 50% salary full year, full salary for 1/2 year, every seven years after tenure is granted.

FACULTY PROFILE

BUETTNER, GARRY R. (b. 1945) Assistant Professor. B.A., 1967, University of Northern Iowa (Cedar Falls), M.S., 1969, University of Iowa, Ph.D., 1976, University of Iowa. Physical Chemistry. Magnetic Resonance, Activated oxygen species in biological systems.

Sixteen publications (1977-1980)

G. R. Buettner, and L. W. Oberley, "The Apparent Production of Superoxide and Hydroxyl Radicals by Hematoporphyrin and Light as seen by Spin Trapping" FEBS Letters, 121, 161-64(1980).

L. W. Oberley, T. D. Oberley, and G. R. Buettner, "Cell Differentiation, Aging and Cancer: The Possible Roles of Superoxide and Superoxide Dismutases" Med. Hypotheses 6, 249-268, (1980).

G. R. Buettner, L. W. Oberley, and S. W. H. C. Leuthauser, "The Effect of Iron on the Distribution of Superoxide and Hydroxyl Radicals as seen by Spin Trapping and on the Superoxide Dismutase Assay", Photochemistry and Photobiology, 28, 693 (1979).

G. R. Buettner and L. W. Oberley, "Considerations in the Spin Trapping of Superoxide and Hydroxyl Radical in Aqueous Systems Using 5,5-Dimethyl-1-Pyrroline-1-oxide", Biochemical Biophysical Research Communications, 83, 69 (1978).

G. R. Buettner and R. E. Corrman, "EPR Determination of the Co(II)-Free Radical Magnetic Geometry of the 'Doublet' Species Arising in a Coenzyme B-12-Enzyme Reaction", Biochimica et Biophysica Acta, 480, 495 (1977).

Grants Active 1979-1980: Milheim Foundation for Cancer Research, $3450, The Mechanisms of Action of Tallysomycin.

1980-81: with Fred Hadley NSF $7980 Acquisition of Equipment for the study of the kinetics of (A) Permanganate Oxidations in Non-Aqueous Media and (B) The Fenton Reaction.

1979-80: Research Corporation Cottrell College Science Grant, $15,000, Superoxide Radical, Hydroxyl Radical, Superoxide Dismutase and Cancer.

HADLEY, FRED J. (b. 1946) Assistant Professor. B.A. 1968 University of Kansas, Ph.D., 1977, Rice University. Physical Chemistry. Gas-Phase and Solution kinetics.

F. Hadley and N. Gallick, General Chemistry Experiments (Stipes, 1977).

F. Hadley and R. Lenox, "On the Melting Point of Acetanilide", J. Chem. Ed. 56, 460 (1979).

McKINNEY, PAUL C. (b. 1930) Professor and Chairman. A.B., 1952, Wabash College, Ph.D., 1958, Northwestern University. Theoretical Chemistry. Schrödinger equation for Burrau molecules, algebraic methods in quantum mechanics.

P. C. McKinney, On the Functions Associated with the Burrau Approximation for the Hydrogen Molecular Ion and Analogous Molecules, J. Chem. Phys., 66, 319 (1977).

OLSEN, ROBERT J. (b. 1948) Assistant Professor. B.S., 1970, University of Wisconsin-Superior, Ph.D., 1976, University of Iowa. Organic Chemistry. Mechanisms and synthetic applications of photochemical reactions.

OLSEN, ROBERT J., cont'd

R. J. Olsen and R. E. Buckles, "Substituent Effects on the Efficiency and Regioselectivity of Tetraarylethylene Photocyclization", *J. Photochem.*, *10*, 215 (1979).

R. S. Givens, W. K. Chae, J. H.-S. Liu, C. V. Neywick, W. D. Gillaspey, R. J. Olsen and P. L. Wylie, "Approaches to New Photochemical Reactions: Studies of Mechanisms and Synthetic Applications", *Preprints of the Division of Petroleum Chemistry*, *24*, 152 (1979).

R. S. Givens, R. J. Olsen and P. L. Wylie, "Photoextrusion of Sulfur Dioxide: General Route to [2.2] Cyclophanes", *J. Org. Chem.*, *44* 1608 (1979).

R. J. Olsen and *O. W. Cummings, "A Photochemical Synthesis of 11*H*-Benzo[*a*]carbazole", accepted by *J. Heterocycl. Chem.*

PHILLIPS, DAVID A. (b. 1937) Associate Professor. B.S., 1958, University of Redlands, Ph.D., 1966, University of Washington. *Inorganic Chemistry*. Transition Metal Complexes, synthesis and reaction mechanisms.

D. A. Phillips, M. Kubota, and J. A. Thomas, Reactions of Nitrosonium Salts with Complexes of Platinum, *Inorg. Chem.*, *15*, 118 (1976).

M. Kubota, D. A. Phillips, and J. E. Jacobsen, Decarbonylation of Acylchlorobis(triphenylphosphine) platinum(II) Complexes Promoted by Tri(II) Chloride, *J. Coord. Chem.*, *125* (1980).

ZIMMERMAN, JOHN F. (b. 1937) Professor. B.S., 1959, State University of Iowa, Ph.D., University of Kansas. *Analytical Chemistry*. The computer-instrument interface, electroanalytical chemistry on the personal computer as a teaching tool.

WAKE FOREST UNIVERSITY

Winston-Salem, N. C. 27109

Fall 1980 ug enrollment 3160

Degrees offered B.A., B.S., M.S., & Ph D.

Telephone (919) 761-5325

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 9.5. 2. Support staff, FTE's: Sec'y 1 Stockrm 1 Technical 0
3. 1980 seniors & their placement: Total 23 Grad. school 3 Industry 3 Professional schools 15 Other 2.
4. Senior majors, average past five years: 30.
5. Undergraduates involved in research, average past five years:
   Academic year 8 per year Summer 3 per year
6. Master's program? yes Master's degrees conferred, average past five years: 1
7. National honors, undergraduate or senior majors, past five years:
   NSF Graduate Fellowship: George J. Scherer, 1978

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 21,000
2. Instrumentation:
   - NMR (P-E R-32)
   - MS (Varian EM-600)
   - IR's (P-E 21,700, 621)
   - UV-Vis (Cary 219C)
   - Raman (Beckman 700)
   - Spectrofluorimeter (Aminco-Bowman)
   - Faraday Balance (Cahn 7600)
   - GC (3 GOW-MAC 150, P-E 154, F&M 500)
   - AA (P-E 306)
   - ESR (Varian Model E-109) with Data Acquisition Unit (EM-935)
3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 115 Computer literature search service? yes Separate chemistry or science library? yes Librarian? no Standing orders for review series and annual reviews (past five years) 51.
4. Computer facilities: Departmental-Terminals: Decwriter II, Decwriter IV, Tektronix 4010 Graphics, Beehive Int. III CRT, Comdata 33 Teletype.
   Computers: HP-2100, 3 Commodore PET 2001.
   Campus: HP-3000 with access to Triangle Univ. Computer Ctr. (IBM 370-165/Amdahl V8 System)

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Wake Forest Research and Publication Fund: Avg. $580/faculty member 1979-80; Travel to research conferences $3100; Chemicals and Supplies $5000.
2. Departmental grants: NSF ISEP, $3900, Electroanalytical Equipment
3. Faculty teaching loads: Contact hours 9 Load credit for research? no
4. Sabbatical or leave support for research: Faculty are eligible for research leaves carrying full salary for one semester or half salary for two semesters. Seven on the average are available yearly for the entire college. Frequency has averaged one in ten years per faculty member.

FACULTY PROFILE

BAIRD, H. WALLACE (b. 1936) Professor. B.A., 1958, Berea College, Ph.D., 1963, University of Wisconsin, Madison. Physical Chemistry. X-ray crystallography; studies of refractory materials and coatings.

GROSS, PAUL M., JR., (b. 19[illegible]0) Associate Professor and Coordinator Wake Forest College Honors Program. B.S., 1941, Duke University, Ph.D., 1948, Brown University. Physical Chemistry. Solubility and vapor pressure studies of strong electrolytes in hydrogen peroxide-water solutions.

HAMRICK, PHILLIP J., JR. (b. 1930) Professor. B.S., 1952, Morris Harvey College, Ph.D., 1956, Duke University. Physical Organic Chemistry. Electron resonance studies of free radicals in organic solids.

P. J. Hamrick, Jr. and Howard Shields, "The Influence of Crystal Structure on Radical Formation and Reactions in x-Irradiated Amino Acids", J. Chem. Phys., 64, 263 (1976).

Grants active 1980: NSF Equipment Grant for Varian EPR Model E-109, $45,000. North Carolina Board of Science and Technology: Varian EM 935 EPR Data Acquisition Unit, $32,000. (Shared jointly with Physics Dept.)

HEGSTROM, ROGER A. (b. 1941) Professor. B.S., 1963, St. Olaf; A.M., 1964, Ph.D., 1968, Harvard. Theoretical Chemistry. Theory of interaction of atoms and molecules with external magnetic fields. Relativistic, radiative, and nuclear motional corrections to g-values. Relativistic quantum theory.

R. A. Hegstrom, D. W. Rein, and P. G. H. Sandars, "Calculation of the Parity Non-Conserving Energy Difference Between Mirror-Image Molecules", J. Chem. Phys., 73, 2329 (1980).

D. W. Rein, R. A. Hegstrom, and P. G. H. Sandars, "Parity Non-Conserving Energy Difference Between Mirror-Image Molecules", Phys. Lett., A71, 499 (1979).

R. A. Hegstrom, "g-Factors and Related Magnetic Properties of Molecules. Formulation of Theory and Calculations for H_2^+, HD^+, and D_2^+", Phys. Rev., A19, 17 (1979).

R. A. Hegstrom and C. Lhuillier, "Reinterpretation of the 'Relativistic Mass' Correction to the Spin Magnetic Moment of a Moving Particle", Phys. Rev., A15, 1797 (1977).

*P. Glenn Barkley and Roger A. Hegstrom, "Effect of Nuclear Mass on g_J(He, 2^3S_1)", Phys. Rev., A14, 1574 (1976).

Grant active 1980: Research Corporation for "Theory of the g Tensor in Paramagnetic Molecules", $6000.

HINZE, WILLIE L. (b. 1949) Associate Professor. B.S., 1970, Sam Houston State University, M.A., 1972, Sam Houston State University, Ph.D., 1974, Texas A&M University. Analytical Chemistry. Application of surfactant and micellar systems in analytical chemistry; synthesis of analytically functionalized micellar surfactants; use of cyclodextrin and micellar systems in TLC and HPLC, and development of kinetic methods of analysis.

Nine publications, 1976-1980.

W. L. Hinze and D. W. Armstrong, "Thin-Layer Chromatographic Separation of Substituted Benzoic Acids with Aqueous Solutions of α-Cyclodextrin", Anal. Lett., 13, in press (1980).

HINZE, WILLIE L., cont'd

W. L. Hinze, "Use of Surfactant and Micellar Systems in Analytical Chemistry", in Solution Chemistry of Surfactants, K. Mittal, Ed., Vol.I, pp. 79-127 (1979).

*S. Spurlin, S. A. Chang, and W. L. Hinze, "Practical Applications of Micelle Systems in Analytical Chemistry", Science-Cien., 6, 54-56 (1978).

*S. Spurlin, D. W. Armstrong, and W. L. Hinze, "Use of an Aqueous Micellar Medium to Improve the Spectrophotometric Determination of Cyanide Ion with 5,5'-Dithiobis(2-nitrobenzoic Acid)", Anal. Lett., 10, 997-1008 (1977).

W. L. Hinze, "Use of Micellar Systems in Analytical Chemistry--Application to the Spectrophotometric Determination of Sulfite Ion with Activated Aromatic Compounds", in Colloid and Interface Science, M. Kerker, Ed., Vol. V, pp. 425-436 (1976).

Grants active 1980-1981:

The Petroleum Research Fund (ACS)-Type AC Grant for "A Quantitative Investigation into the Nature, Magnitude, and Origins of Room Temperature Liquid Phosphorescence in Micellar Systems", $30,000.

The Sigma Xi Research Society Grant-in-Aid for "The Use of Cyclodextrins in Thin Layer Chromatographic Separations", $500.

The Research Corporation for "Thin Layer Chromatographic Separation of Aromatic Compounds using Cyclodextrins as the Mobile Phase", $4,840.

JACKELS, CHARLES F. (b. 1946) Assistant Professor. B. Chem., 1968, University of Minnesota, Ph.D., 1975, University of Washington. Quantum Chemistry. ab initio studies of ground and excited state potential energy surfaces using self-consistent-field and configuration-interaction methods.

Charles F. Jackels, "An ab initio Potential-Energy Surface Study of Several States of the Water Cation", J. Chem. Phys., 72, 4873 (1980).

Charles F. Jackels, "Theoretical Excitation Energies of the Lowest Quartet States of Nitrogen Dioxide", J. Chem. Phys., 70, 4664 (1979).

Charles F. Jackels and Ernest R. Davidson, "An ab initio Potential-Energy Surface Study of Several Electronic States of NO_2" J. Chem. Phys., 65, 2941 (1976).

Charles F. Jackels and Ernest R. Davidson, "The Two Lowest Energy A' States of NO_2", J. Chem. Phys., 64, 2908 (1976).

JACKELS, SUSAN C. (b. 1946) Assistant Professor. B.A., 1968, Carleton College, Ph.D., 1973, University of Washington. Inorganic Chemistry. Coordination chemistry; synthesis and characterization of macrocyclic transition metal complexes; reactions of coordinated ligands; transition metal catalysts.

Six publications, 1976-1980.

Drake S. Eggleston and Susan C. Jackels, "Tetrasubstituted [14]-1,3,8,10-tetraeneN_4 Macrocyclic Complexes: Synthesis, Organic Precursor, and Template Reaction Mechanism, Inorg. Chem., 19, 1593 (1980).

Joe. G. Norman, Jr., Barbara J. Kalbacher, and Susan C. Jackels, "Metal-metal Interactions in 2-Fe Ferredoxins", J. C. S. Chem. Commun., 1027 (1978).

Susan C. Jackels, Jack Zektzer, and Norman J. Rose, "Syntheses of Cobalt(III) and Iron(II) Clathro Chelates Derived from Dioximes and Boron Compounds", Inorganic Syntheses, Vol. XVII (MacDiarmid, A. G., ed.), McGraw-Hill, 1978.

Y. Hung, L. Y. Martin, S. C. Jackels, A. M. Tait, and D. H. Busch, "Ring Size Effects Among Metal Complexes with Macrocyclic Ligands. Synthesis, Stereochemistry, Spectrochemistry and Electrochemistry of Cobalt(III) Complexes with Unsubstituted, Saturated Tetraaza Macrocycles", J. Am. Chem. Soc., 99, 4029 (1977).

JACKELS, SUSAN C., cont'd

Susan C. Jackels, Ernest R. Davidson, and N. J. Rose, "A Model for Calculatin the Mössbauer Quadrupole Splitting of Low Symmetry Iron Complexes. Application to Pseudo-D_3 and Pseudo-D_{2h} Low-Spin Ferrous Complexes", *J. Am. Chem. Soc.*, *98*, 5826 (1976).

Grants active 1980-1981:

Research Corporation and Lubrizol Corporation Cottrell College Science Grant, $13,000/2 years, Synthesis of Transition Metal Complexes of Substituted Alpha-Diimine Macrocycles. NSF-Important Notice 69A, $9,800, Equipment to Study Magnetic Susceptibilities of Substituted Macrocyclic Complexes.

JONES, RICHARD R. M. (b. 1947) B.S., 1969, University of Tennessee, Ph.D., 1976, California Institute of Technology. *Organic Chemistry*. Synthesis of materials of potential importance to enhanced oil recovery; membrane bound catalysis and solvent extraction of rare earth elements; physical chemistry of systems near a tricritical point; thermodynamic stability of highly conjugated cyclic systems; synthesis of potentially anti aromatic π-systems.

C. J. Collins, E. Q. Hagaman, R. R. Jones, and V. Raaen, "Incorporation of ^{14}C-Labelled Amines into lvb Coal", *Fuel* (London), in press (1980).

MILLER, HARRY B. (b. 1913) Professor. B.S., 1936; Ph.D., 1947, University of North Carolina. *Physical Organic Chemistry*. Oxirane ring-opening in non-polar media. Reactions of antimony chlorofluorides.

NOFTLE, R. E. (b. 1939) Professor and Chairman. B.S., 1961, University of N. H., Ph.D., 1966, University of Washington. *Inorganic Chemistry*. Synthesis and characterization of halogen-containing compounds; vibrational spectroscopy of inorganic fluorine compounds and perfluorocarbon derivatives; chemistry of nonmetals.

Six publications, 1976-1980.

R. E. Noftle, "On the Preparation of Trifluoromethyl Trifluoromethanesulfonate", *Inorg. Nucl. Chem. Lett.*, *16*, 195 (1980).

R. E. Noftle, R. R. Smardzewski, and W. B. Fox, "Gas-Phase Raman Spectrum of Pentafluorosulfur Chloride, SF_5Cl", *Inorg. Chem.* *16*, 3380 (1977).

Y. Haven and R. E. Noftle, "The Mössbauer Isomer Shift In Iron(III) Sulfate", *J. Chem. Phys.*, *67* (6) 2825 (1977).

R. E. Noftle, R. R. Smardzewski, and W. B. Fox, "Argon Matrix Raman and Infrared Spectra of SF_5Cl, SF_5Br, and S_2F_{10}", *J. Molec. Spectrosc.*, *62*, 449 (1976).

R. E. Noftle, J. W. Green*, and S. K. Yarbro*, Reactions of Fluorosulfuryl Isocyanate with Group IIB Metal Fluorides", *J. Fluor. Chem.*, *7*, 221 (1976).

Grants Active 1979-1980:

Research Corporation Cottrell College Science Grant, $4800, "Vibrational Analysis of Trifluoromethanesulfonates by Oxygen-18 Isotopic Substitution".

NOWELL, JOHN WILLIAM (b. 1919), Professor. B.S., 1940, Wake Forest College; Ph.D., 1945, University of North Carolina. *Physical Chemistry*.

WASHINGTON and LEE UNIVERSITY

Lexington, VA. 24450

Fall 1980 ug enrollment 1290

Degrees offered BA, BS, BS (spec.)

Telephone (703)463-9111

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 5.6 . 2. Support staff, FTE's: Sec'y 3/4 Stockrm 1/2 Technical 0
3. 1980 seniors & their placement: Total 11 Grad. school 3 Industry 2 Professional schools 3 Other 3 .
4. Senior majors, average past five years: 8.4 .
5. Undergraduates involved in research, average past five years:
   Academic year 8 Summer 2
6. Master's program? no Master's degrees conferred, average past five years: 0
7. National honors, undergraduate or senior majors, past five years:
   1977 - Vaughan M. Pultz, Fulbright

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 20,000
2. Instrumentation:
   GC (Carle 9500)
   IR (P-E 337)
   AA (J-A 82-270)
   UV-Visible (P-E 552)
   Polarograph (PAR 174)
   NMR (at neighboring VMI)
3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 41 Computer literature search service? no Separate chemistry or science library? yes Librarian? no Standing orders for review series and annual reviews (past five years) 14 .
4. Computer facilities: Campus; Harris S/125 time sharing system, 16 terminals including Tektronix4025 graphics terminal (one terminal in department).

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   About $6000/year for student stipends and miscellaneous supplies.
2. Departmental grants:
   none
3. Faculty teaching loads: Contact hours 12 Load credit for research? no .
4. Sabbatical or leave support for research:
   Full salary for one term or half salary for academic year at no less than five year intervals.

FACULTY PROFILE

GOEHRING, J. BROWN (b. 1935) Professor. B.S., 1956, Davidson College, Ph.D., 1962, University of North Carolina at Chapel Hill. Inorganic Chemistry and History of Chemistry. Audiovisual materials (animation; slide/tape; and computer-related), history of bonding theories, aqueous inorganic chemistry (polymerization phenomena).

IMESON, THOMAS C. (b. 1938) Professor and Director of Computer Center. B.S., 1961, Washington and Lee University, Ph.D., 1965, University of Florida. Physical Chemistry. Molecular beams.

PLEVA, MICHAEL A. (b. 1941) Associage Professor. B.S. 1963, M.S. 1965, Trinity College, Ph.D., 1969, University of New Hampshire. Analytical Chemistry. Atomic spectroscopy, experimental design and statistical analysis, computer assisted teaching aids.

F.A. Settle and M.A. Pleva, "Instrumentation Information Network Project", American Laboratory, May 1980, pp95-97.

F.A. Settle and M.A. Pleva, "A Computer Information Network for Users of Chemical Instrumentation", J.Chem.Ed., 57, A255 (1980).

*W.H. Matthai, Jr., and M.A. Pleva, "The Analytical Problems of Pottery Analysis", Va.Jour.Sci., 30,65 (1979)

M.A. Pleva, *M. Derbyshire, and J. McDaniel, "Atomic Spectroscopy as a Tool of Artifact Analysis in Historic Site Archaeology", Va.Jour.Sci., 29,81 (1978)

SHILLINGTON, JAMES K. (b. 1921) Professor. B.S., 1943,Iowa State University, Ph.D., 1952, Cornell University. Organic Chemistry. Macrocycles, propellanes, micelle chemistry, phrase transfer catalysis, optical resolution and resolving agents.

D.W. Armstrong, H. Kornahrens, *D.J. Carucci, *B.A. Wohler, *J.E. Kahn and J.K. Shillington, "Organometallic Salts as Phase Transfer Catalysts", Tetrahedron Letters, 47, 4525 (1979).

*D.J. Carucci, *D.H. Harpole, Jr., *J.E. Kahn, *J.C. Kisalus, *E.U. Kissel, III, *L.T. Megna, M.A. Pleva, J.K. Shillington, "An Improved Method of Colorimetric Determination of Ammonium Ion", Va.Jour.Sci., 30, 63 (1979).

*S.K. Bailey, *J.M. Dean, III, *W.R. Schooley, *J.G. Sheridan, Jr., J.K. Shillington, *E.W. Stradtman, Jr., and *K.A. Teel, "The Action of Ozone on $\Delta^{9,10}$–Octalin", Va.Jour.Sci., 28,78 (1979).

WATT, WILLIAM J. (b. 1925) Professor and Dean of the College. B.S., 1949, University of Illinois, M.S., 1951, Ph.D., 1956, Cornell University. Inorganic Chemistry.

WHITNEY, GEORGE S. (b. 1934) Professor. B.A., 1955, University of Colorado, Ph.D., 1962, Northwestern University. Organic Chemistry, Biochemistry. Bicyclic compounds, carbenes, stereochemistry.

G.S. Whitney and *R.C. Wisman, "Dichloro carbene derivatives of cyclics and bicyclic dienes (non-conjugaged)", Va.Jour.Sci., 27,68 (1976).

WISE, JOHN H. (b. 1920) Professor and Head. B.S., 1942, Haverford College, Ph.D., 1947, Brown University. Physical Chemistry. Atomic and molecular structure and spectroscopy, computer programming for chemical education.

John H. Wise, "Spectroscopic Terms for Equivalent Electrons", J.Chem.Ed., 53, 496 (1976)

WELLESLEY COLLEGE
Wellesley, MA 02181

Fall 1980 ug enrollment 2168
Degrees offered B.A.
Telephone (617) 235-0320 x339

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 9.6* 2. Support staff, FTE's: Sec'y 1.0 Stockrm 1.0 Technical 1.5
3. 1980 seniors & their placement: Total 31^+ Grad. school 4 Industry 5 Professional schools 8 Other 14.
4. Senior majors, average past five years: 29 (including Molecular Biology)
5. Undergraduates involved in research, average past five years: Academic year 11 Summer 5
6. Master's program? no Master's degrees conferred, average past five years? none
7. National honors, undergraduate or senior majors, past five years:
   1979-Christina Redfield, NSF Graduate Fellowship

*Plus 2 full-time & 2 part-time lab. instructors

+22 chemistry & 9 molecular biology majors (an interdepartmental major in chemistry & biology)

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 14,500 + classrooms & library
2. Instrumentation:
   - NMR (P-E R32)
   - NMR (Varian CFT-20, ^{1}H, ^{13}C, ^{31}P)
   - IR (several)
   - UV-Vis (several, including GCA-McPherson 707)
   - AA (P-E 372)
   - Liquid Chromatograph (Waters 500A)
   - Liquid Scintillation Counters (Packard 460 & Beckman LS-150)
   - Gas chromatographs (including Varian 1420 dual column)
   - X-ray diffractometer (Phillips, w/powder, Weissenberg & procession cameras)
   - Ultracentrifuges (Spinco L-250 & Sorval)
3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 89 Computer literature search service? no Separate chemistry or science library? yes Librarian? yes Standing orders for review series and annual reviews (past five years) 25.
4. Computer facilities:
   DECsystem 2040 time-sharing computer, 25 CRT and 12 Hard-copy terminals, 5 graphics terminals, 1 flat-bed plotter, 2 line printers, 2 portable terminals.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   Faculty awards; $50/unit of independent study; purchase of capital equipment i.e. P-E NMR, Gilford UV spectrometers
2. Departmental grants:
   DuPont College Science Grant, $7,000
   Merck Women in Science Grant, $4250
3. Faculty teaching loads: Contact hours 14 Load credit for research? no
4. Sabbatical or leave support for research: Ordinarily full year at half salary. For tenured members, ordinarily every seven years. Untenured members eligible to apply for early leave after three years full-time. If supplementary outside support sought but not obtained, Wellesley College may supplement to full salary.

FACULTY PROFILE

CRAWFORD, JEAN V. (b. 1919) Professor, B.A. 1940, Mt. Holyoke, M.A., Oberlin, Ph.D., 1950, University of Illinois, *Organic Chemistry*. Synthesis of some 8-substituted P^1,P^4-di(adenosine-5')-tetraphosphates.

ELLIOTT, JANET (b. 1951) Assistant Professor, B.S., 1973, University of Michigan, Ph.D., 1979, California Institute of Technology. *Biochemistry*. Acetylcholine receptor biochemistry.

J. Elliott, S. G. Blanchard, W.Wu, J. Miller, D.C. Strader, P. Hartig, H.-P. Moore, J. Racs, and M.A. Raftery, "Purification of *Torpedo californica* postsynaptic membranes and fractionation of their constituent polypeptides", *Biochemical Journal*, *185*, 667 (1980).

M.A. Raftery, J. Elliott, H.-P Moore, P. Hartig, and W. Wu, "Molecular interactions of *Torpedo californica* acetylcholine receptor in a highly purified membrane-bound form", Proceedings of the 1st International Colloquium on Receptors, Neurotransmitters, and Peptide Hormones. G. Pepeu, Editor, Raven Press, New York, 1979.

S.G. Blanchard, J. Elliott, and M.A. Raftery, "Interaction of local anesthetics with *Torpedo californica* membrane-bound acetylcholine receptor", *Biochemistry*, *18*, 5880, (1979).

J. Elliott, S.M.J. Dunn, S.G. Blanchard, and M.A. Raftery, "Specific binding of perhydrohistrionicotoxin to *Torpedo californica* membrane-bound acetylocholine receptor" *Proc. Natl. Acad. Sci., USA 76*, 2576 (1979)

J. Elliott and M.A. Raftery, "The binding of perhydrohistrionicotoxin to intact and detergent solubilized membranes enriched in nicotinic acetylcholine receptor", *Biochemistry* *10*, 1868 (1979).

HEARN, MICHAEL J. (b. 1949) Assistant Professor, B.A., 1971, Rutgers College, M.S., 1973, Yale University, M. Phil, 1975, Yale University, Ph.D., 1976, Yale University. *Organic Chemistry*. Syntheses and reactions of polynitrogen compounds.

M.J. Hearn and J.E. Grimwade, "A convenient Method for the Preparation of 1-Acyl-2-Phenylhydrazines", Organic Preparations and Procedures International, 1980 *12* 249-251 (1980).

M.J. Hearn and E.S. Chung, "Hydrogenolytic Cleavage Reactions of Phenylhydrazides", *Synthetic Communications* *10*, 253 (1980).

H.H. Wasserman, M.J. Hearn and R.E. Cochoy, "Vinylcyclopropanols. Preparation from Cyclopropanone and Electrophilic Rearrangements to Cyclobutanones", *Journal of Organic Chemistry*, 1980, accepted for publication, in press.

H.H. Wasserman, M.J. Hearn, B. Haveaux and M. Thyes, "Cyclobutanones from Cyclopropanone Precursors, Addition of Nitroalkanes to Cyclopropanone Aminals", *Journal of Organic Chemistry* *41*, 153 (1976).

HICKS, SONJA E. (b. 1940) Professor. B.S., 1962, University of Maine, Ph.D., 1966, Indiana University Medical Center. *Biochemistry*. Nutritional Studies of trace metals during stress (such as pregnancy and malignancies).

HUME, DAVID N. (b. 1917) Visiting Professor. B.A., 1932, M.A., 1940 University of California at Los Angeles; Ph.D., 1943, University of Montana. *Analytical Chemistry*. Electroanalytical chemistry and trace analysis.

HUME, DAVID N., cont'd

D. Hume, F.L. Sayles, P.C. Mangelsdorf and T.R.S. Wilson, "A Sampler for the In-Situ Collection of Marine Sedimentary Pore Waters", Deep Sea Res. 23, 259 (1976).

D. Hume and R.J. Stolzberg, "Determination of Nitrilotriacetate in Environmental Water by Gas Chromatography of the Trimethylsilyl Ester), Anal. Chem. 49 374 (1977).

D. Hume, F.M.M. Morel and J.C. Westall, "Interference of Chloride With the Cupric Ion-Selective Electrode", Anal. Chem. 51 1792 (1979).

D. Hume, and R.J. Siebert, "Determination of Copper by Anodic Stripping Voltammetry: Anomalous Behavior in Seawater", Accepted by Analytica Chemica Acta.

D. Hume and E.F. Fitzgerald, "The Single Chemical Test for Intoxication: A Challenge to Admissibility", Accepted by Massachusetts Law Review.

KAHL, STEPHEN B. (b. 1946) Assistant Professor, B.S., 1968, Duke University, Ph.D., 1972, Indiana University. Inorganic Chemistry. Synthesis of carboranyl steroids for cancer radiation therapy.

L.J. Todd, A.R. Siedle, G.M. Bodner, S.B. Kahl and J.P. Hickey, "An NMR Study of Icosahedral Heteroatom Boron Derivatives", J. of Magnetic Resonance 23, 301 (1976).

Grant active, 1980-81: National Science Foundation Two- and Four-Year College Research Instrumentation Program, $16,814, Acquisition of a High Pressure Liquid Chromatograph.

KOLODNY, NANCY H. (b. 1944) Associate Professor, B.A., 1964, Wellesley College, Ph.D., 1969, Massachusetts Institute of Technology. Physical Chemistry. NMR studies of conformations of small biological molecules.

N.H. Kolodny and A.C. Neville, "Effect of pD on the Interaction between Tryptamine and Dinucleoside Phosphates", 1980, in press, Biopolymers.

N.H. Kolodny, E. Kisteneff, C. Redfield and E. Rapaport, "Ap_4A and Ap_5A Prefer Folded Unstacked Conformations at pH 4-5, in Sharp Contrast with Ap_2 and Ap_3A", FEBS Letters 107, 121 (1979).

N.H. Kolodny, A.C. Neville, D.L. Coleman and P.C. Zamecnik, "Nuclear Magnetic Resonance Study of Interactions between Tryptophan and Dinucleoside Phosphates", Biopolymers 16, 159 (1977).

F.P. Gasparro and N.H. Kolodny, "Dynamic Nuclear Magnetic Resonance Spectroscopy: Determination of the Rotational Barrier in N,N-dimethylacetamide", Journal of Chemical Education 54, 258 (1977).

Grants active: 1978-83, Dreyfus Teacher-Scholar Grant, $35,000; 1980-82, Research Corporation Cottrell College Science Grant, $12,000; 1980-81, National Science Foundation Two- and Four-Year College Research Instrumentation Program, $24,705, Effects of Mg^{+2}, pH and temperature on the conformations of dinucleoside polyphosphates.

LEVY, JUDITH T. (b. 1946) Associate Professor, B.S., 1967, Goucher College, Ph.D., 1971, Johns Hopkins University. Biochemistry. Interaction of proteins with calcium ions: Bone mineralization, Atherosclerosis.

J.B. Lian, R.J. Levy, J.T. Levy and P.A. Friedman, "Other Vitamin K Dependent Proteins", in Calcium Binding Proteins and Calcium Function, ed. R.H. Wasserman, et al, New York, Elsevier North-Holland, in press.

P.O.P. Ts'O, J.L. Alderfer, J. Levy, L.W. Marshall, J. O'Malley, J.S. Horoszewicz and W.A. Carter, "An Integrated and Comparative Study of the Antiviral Effects and Other Biological Properties of the Polyinosinic Acid-Polycytidylic Acid and its Mismatched Analogues", Molecular Pharmacology 12, 299 (1976).

LEVY, JUDITH T., cont'd

Grants active: National Science Foundation Two- and Four-Year College Research Instrumentation Program, $22,500, Purification of High Molecular Weight Gla-containing Protein.

LOEHLIN, JAMES H. (b. 1934) Professor, B.A., 1956, College of Wooster (Ohio), Ph.D., 1960, Massachusetts Institute of Technology. *Physical Chemistry*. Crystal structure determination using x-ray diffraction. Studies of intermolecular hydrogen bonding. Energy conversion and chemical storage.

J.H. Loehlin, S.B. Kahl and J.A. Darlington, "The Study of a Cobalt Complex--A Laboratory Project", accepted by the *Journal of Chemical Education*.

J.H. Loehlin and Ake Kvick, "Tetraethylammonium Chloride Monohydrate", *Acta Cryst*. *B34*, 3488 (1978).

J.H. Loehlin and E.B. Fleischer, "Carbonato(1,4,7,10-tetraazacyclododecane)-cobalt(III) Perchlorate Monohydrate", *Acta Cryst*. *B32*, 3063 (1976).

ROCK, ELIZABETH J. (b. 1924) Arthur J. and Nellie Z. Cohen Professor of Chemistry. B.S., 1946, College of Mount Saint Vincent, M.A., 1948, Smith College, Ph.D., 1951, Pennsylvania State University. *Physical Chemistry*. Use of Atomic Absorption Spectrophotometry in the analysis of ancient coins; Application of physical chemistry to conservation of stone monuments.

ROSENFELD, STUART M. (b. 1948), Assistant Professor, B.A., 1969, Colby College, Ph.D., 1973, Brown University. *Organic Chemistry*. Synthesis and Spectroscopy of highly strained molecules and of beta-ketoacids.

K.D. Grande and S.M. Rosenfeld, "Tautomeric Equilibria in Acetoacetic Acid", *J. Org. Chem.* *45*, 1626 (1980).

S.M. Rosenfeld, "Stereoselective Nucleophilic Additions to 9, 10-Anthraquinone. Comparison of Grignard and Sulfur Ylide Additions", *JCS Perkin I*, 2878 (1979).

J. Eynon, R. LaFauci and S.M. Rosenfeld, "Convenient Preparation of 10-Spirocyclopropylanthrone", *Organic Preparations and Procedures Int*. *11*, 71 (1979)

T.J. McCarthy, W.F. Connor and S.M. Rosenfeld, "Stereospecific Addition of Dimethylsulfonium Methylide to 9,10-Anthraquinone", *Syn. Commun*. *8*, 378 (1978).

S.M. Rosenfeld, "Direct Detection of the Enol of Acetophenone in Vapor Phase Decarboxylation of a beta-Ketoacid", *Tet. Letters*, 2655 (1978).

Grants active: 1980-82, Petroleum Research Fund, $13,200, 9,10-Bridged Anthracenes; 1980-81, National Science Foundation Two- and Four-Year College Research Instrumentation Program, $24,705, Carbon-13 and Phosphorus-31 Nuclear Magnetic Resonance Studies of Molecular Structure; 1980-81, Research Corporation, $6200, Structure of beta-Ketoacids in Solution.

SWALLOW, KATHLEEN C. (b. 1948) Assistant Professor. B.S., 1970, Westhampton College, Ph.D., 1978, Massachusetts Institute of Technology. *Analytical Chemistry*. Characterization of Naturally Occuring Copper Complexing Organic Compounds.

K.C. Swallow, J.C. Westall, D.M. McKnight, N.M.L. Morel and F.M.M. Morel, "Potentiometric Determination of Copper Complexation by Phytoplankton Exudates", *Limnology and Oceanography*, *23(3)*, 538, (1978).

WEBSTER, ELEANOR R. (b. 1920) Professor and Chairman, A.B. 1942, Wellesley College; M.A. 1944, Mount Holyoke College; M.A. 1951 and Ph.D. 1952, Radcliff College. *Organic Chemistry* and *History of Science*. Synthesis of some dinucleoside phosphates.

WHEATON COLLEGE
Wheaton, IL 60187

Fall 1980 ug enrollment 2050
Degrees offered B.S., A.B.
Telephone (312) 260-5065

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 6. 2. Support staff, FTE's: Sec'y 0.8 Stockrm 1 Technical 0.5
3. 1980 seniors & their placement: Total 27 Grad. school 4 Industry 1
   Professional schools 8 Other 14.
4. Senior majors, average past five years: 18.
5. Undergraduates involved in research, average past five years:
   Academic year 6 Summer 3
6. Master's program? NO Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:
   NONE

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 29,500
2. Instrumentation:
   NMR: Varian T-60
   UV-Vis: Cary 219, Beckman DK-2A, Beckman 25
   AA: Varian 1200
   G.C./Mass Spec: PE Hitachi RMU-6
   I.R.: P.E. 337
   GC: PE 881
   Polarograph: SW 4001
   Raman: Cary 81 modified
   Fluorometer: Aminco-Bowman
   Prep U-fuge: Beckman LS-50
3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 17 Computer literature search service? Yes Separate chemistry or science library? NO Librarian? No Standing orders for review series and annual reviews (past five years) 9. John Crerar Library in Chicago is also used.
4. Computer facilities: Science: two DEC 1103, Cromenco microcomputer
   Campus: PDP 11-45, DEC 2020 Intersystems microcomputer

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: About $2700 for equipment, supplies, conferences, etc.
2. Departmental grants: DuPont Grant: $7000, Johnson Wax: $2500, Shattuck Fund: $2720.
3. Faculty teaching loads: Contact hours 13 Load credit for research? No
4. Sabbatical or leave support for research: Not available. Alumni Grants available on application, for one quarter.

FACULTY PROFILE

BRACE, NEAL O. (b. 1922) Professor. B.A., 1946, University of Minnesota, Ph.D., 1948, University of Illinois Organic Chemistry. Free radical reactions of organic fluorine containing compounds. Mechanisms of reactions. Cyclization reactions. Surface activity of organic compounds.

N. O. Brace and *James E. Van Elswyk, "Evidence for Free Radical Reductive Dehalogenation in Reaction of Zinc and Acid with 1-Perfluoroalkyl-2-Iodoalkanes and with 1-Perfluoroalkyl-2-Iodoalkenes", J. Org. Chem., 41, 766 (1976).

N. O. Brace, "Syntheses with F-Alkyl Radicals from F-Alkyl Iodides: Amine and Amine Salt Induced Addition to Alkenes", J. Org. Chem., 44, 212 (1979).

N. O. Brace, "Free Radical Addition of Iodo-F-alkanes to Isomeric 5-Norbornene-2, 3-dicarboxylic Acid Derivatives", J. Org. Chem., 44, 1964 (1979).

N. O. Brace, "Perfluoroalkyl-Iodo Norbornane Dicarboxylic Acids and Derivatives Thereof", Patent Number US 4,144,244 Mar. 13, 1979. Chem Abs., 91, 4989f (1979).

CHIGNELL, DEREK A. (b. 1943) Associate Professor and Chairman. B.S., 1964, King's College, University of London, England, Ph.D. 1969, King's College, University of London, England, M.A., 1977, Wheaton College, Wheaton, Illinois (Communications). Chemistry, Biochemistry. Biochemistry of Vision, Electron Transport in Mitochondria.

"Proteins", a chapter in the book, Biochemistry and Physiology by Bell, Davidson and Smith, ed., by C. R. Paterson, Longmans (1976).

D. Macqueen, D. A. Chignell, G. J. Dutton & P. B. Garland, "Biochemistry for medical students: a flexible student-oriented approach", Medical Education, 10, 418 (1976).

FIESS, HAROLD A. (b. 1917) Professor, B.S., 1939, Wheaton College, M.S., Ph.D. 1944, University of Illinois, Urbana. Analytical Chemistry. Analytical electrochemistry, trace analysis.

FUNCK, LARRY L. (b. 1942) Professor, B.S., 1964, Lebanon Valley College, Ph.D., 1969, Lehigh University. Inorganic Chemistry. Metal complex equilibria, electronic spectra of metal complexes, bioinorganic chemistry.

HUNG, NARL C. (b. 1935) Professor, B.S., 1956, National Cheng-Kung University, M.A., 1959, Wellesley College, Ph.D., 1962, University of Rochester. Physical Chemistry. Energy Transfer in Gas Kinetics, Ab initio Molecular Orbital Calculations, Computer Applications and Instruction in Chemistry.

Narl C. Hung, "Survey of Evaluations and Grading in Undergraduate Chemistry", J. Chem. Ed., 53, 565 (1976).

NIEMCZYK, MARK P. (b. 1946) Assistant Professor. B.A., 1968, SUNY at Buffalo, Ph.D. 1972, Columbia, Physical Organic Photochemistry. Physical organic photochemistry, synthesis, strained molecules.

WILKINSON, TIMOTHY J. (b. 1946) Assistant Professor. B.S. 1968, Western Illinois University, M.S., 1972, Ph.D. 1975, Texas A&M University. Organic Chemistry. Photochemistry of modified proteins, synthetic organic chemistry.

P.S. Mariano, G.I. Glover, and T.J. Wilkinson, "Photochemistry of Modified Proteins: Benzophenone-Containing Bovine Serum Albumin", Photochemistry and Photobiology, 23, 147 (1976).

P.S. Mariano, G.I. Glover, and T.J. Wilkinson, "The Mechanism of Energy Transfer from Poly-p-Benzoylphenylacetimido-Bovine Serum Albumin to Small-Molecule Quenchers", Photochemistry and Photobiology, 23, 155 (1976).

G.I. Glover, P.S. Mariano, and T.J. Wilkinson, "Affinity Chromatographic Separations of Chemically Modified α-Chymotrypsin from α-Chymotrypsin", Separation Science, 4, 385 (1976).

A.I. Scott, and T.J. Wilkinson, "Direct Syntheses of β-Hydroxyvaline and $4,4^1$-$^2H_6$ -β-Hydroxyvaline", Journal of Labelled Compounds and Radio-pharmaceuticals, accepted for publication, 1980.

A.I. Scott and T.J. Wilkinson, "Synthesis of L-α-Aminoadipic Acid from L-Lysine" Synthetic Communications, 10(2), 127, (1980).

WHEATON COLLEGE

Norton, MA 02766

Fall 1980 ug enrollment 1163

Degrees offered B.A.

Telephone 617-285-7722

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 4.5 . 2. Support staff, FTE's: Sec'y 1 Stockrm ____ Technical 2
3. 1980 seniors & their placement: Total 8 Grad. school 3 Industry 1 Professional schools 2 Other 2 .
4. Senior majors, average past five years: 7 .
5. Undergraduates involved in research, average past five years:
   Academic year 3 Summer 5
6. Master's program? Yes Master's degrees conferred, average past five years: None
7. National honors, undergraduate or senior majors, past five years:

   None.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft² $20,000
2. Instrumentation:
   - MS (Varian EM-300)
   - NMR (Varian T-60)
   - AA (P-E 290B)
   - IR's (P-E 137 (2) and P-E 337)
   - UV-Visible (Beckman DU and P-E 202)
     Bausch and Lomb Spectronic 2000
   - GC's (Varian A-90-P(2);A-90-P3, 1200-1)
   - HPLC (Waters 6000A)
   - Polarimeter (Rudolph 70)
   - Polarograph (Sargent XV)
   - Magnetic Susceptibility (Cohn)
3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 25 Computer literature search service? No Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 14 .
4. Computer facilities:

   On campus DEC PDP 11/70

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   $2296 for support of undergraduate research assistants
2. Departmental grants:

   None.
3. Faculty teaching loads: Contact hours 9 Load credit for research? 0
4. Sabbatical or leave support for research:

   0

FACULTY PROFILE

JENNINGS, BOJAN HAMLIN (b. 1920) Professor and Chairman. B.A., 1941, Bryn Mawr College, Ph.D., 1955, Harvard University. Physical Organic Chemistry. Ultrasonic Chemistry, Photochemistry, Steroid Syntheses.

B.H. Jennings and *J.M. Bengtson, "Reactions of 4β,5-Epoxy-androstane-3-ones with Hydrogen Fluoride in Pyridine," Steroids, 31, 49 (1978).

B.H. Jennings and *L. Yelle, "Oxidation of a Steroidal Bromohydrin Revisited," accepted for publication: Steroids, January, 1981.

Grant 1978-81: Petroleum Research Fund $13,000.

ELLISON, HERBERT R. (b. 1934) Professor and Associate Dean. B.A., 1956, Clark University, Ph.D., 1960, Brown University. Physical Chemistry. Dielectric studies of hydrogen bonding.

H.R. Ellison, "A Simplified Recording Manometer", J. Chem. Educ., 55, 817 (1978).

H.R. Ellison, "Binary Solid-Liquid Phase Equilibria: A Physical Chemistry Experiment", J. Chem. Educ., 55, 406 (1978)

PEARSON, MYRNA S. (b. 1936) Associate Professor. A.B., 1958, University of Pennsylvania, M.A., 1959, Ph.D., 1963, Columbia University. Physical Organic and Environmental Chemistry. Effects of structure on reactivity, water pollution problems, chlorinated organic compounds in the environment.

M.S. Pearson, *B.J. Jensky, *Francis X. Greer, *J.P. Hagstrom, and *Nancy M. Wells, "Substituent Effects in the Keto-Enol Tautomerism of Fused 1,4-Naphthalenediols," J. Org. Chem., 43, 4617 (1978).

BOUDREAU, SHARON M. (b. 1953) Assistant Professor of Chemistry. B.A., 1975, Wheaton College, Ph.D., 1979, University of New Hampshire. Inorganic Chemistry. Synthesis and structural characterization of metal amino acid systems.

S.M. Boudreau and H.M. Haendler, "The Crystal and Molecular Structure of Tris(ortho-aminobenzoato)aquattrium(III)," Journal of Solid State Chemistry, March 1981.

S.M. Boudreau, H.M. Haendler, P.M. Carkner, and R.A. Boudreau, "The Crystal Structure of Copper Bromide Triselenide," Journal of Solid State Chemistry, 29, 35 (1979).

S.M. Boudreau and H.M. Haendler, "A Diffusion Apparatus for the Growth of Single Crystals," Journal of Applied Crystallography, 11, 62 (1978).

WHITMAN COLLEGE
WALLA WALLA, WA 99362

Fall 1980 ug enrollment 1104
Degrees offered B.A.
Telephone (509)527-5111

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 4 . 2. Support staff, FTE's: Sec'y 0.25 Stockrm 0.50 Technical 0.25
3. 1980 seniors & their placement: Total 10 Grad. school 2 Industry 0 Professional schools 1 Other 7 .
4. Senior majors, average past five years: 12 .
5. Undergraduates involved in research, average past five years:
   Academic year 3 Summer 1
6. Master's program? No Master's degrees conferred, average past five years? N/A
7. National honors, undergraduate or senior majors, past five years:

   1980 - Dawn C. Schwenke, NSF Fellowship

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 9600
2. Instrumentation:

AA (P-E 303)	Polarographs (two modular Heathkit)
GC (Varian 3760, Varian A90-P3)	LS Counter (Nuclear Chicago Unilux)
IR (P-E 21, P-E 237B)	Solution Calorimeter (Guild Corp.)
NMR (P-E R24A - 60 MHZ)	
UV-Vis (Beckman DU, Beckman DK-2A)	

3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes* Total journal subscriptions? 18 Computer literature search service? No Separate chemistry or science library? No Librarian? No Standing orders for review series and annual reviews (past five years) 9 .
   *through 8th index.
4. Computer facilities: Campus: Hewlett-Packard 3000 Series III Model 8 time share system with 4 remote terminals (CRT and Keyboard) and 2 300 line per minute thermal printers in Science building; 2 high speed printers, a four-color plotter and add'l terminals in Computer Center.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:

   About $800/year for chemicals and supplies from department budget. Add'l funds for equipment, travel, publication costs available from college.
2. Departmental grants:

   1979 - Tektronix Foundation grant, $6,900
   1980 - Meyer Foundation grant, $10,000
3. Faculty teaching loads: Contact hours 14 Load credit for research? No .
4. Sabbatical or leave support for research:

   Faculty can apply for sabbatical leave at 75% salary for full year or for full salary for 1/2 year. Frequency averages every 7th year.

FACULTY PROFILE

FRASCO, DAVID L. (b. 1931) Professor. B.A., 1953, Northern Colo. University M.S., 1955, Washington State University, Ph.D., 1958, Washington State University. Physical Chemistry. Infrared Spectra of Solids, Electrical & Physical properties of Lipid Bilayers.

D. R. Kalkwarf and D. L. Frasco, "Lysis of Phospholipid Membranes with Radiation-Induced Free Radicals," Radiation Research, 70, 647 (1977).

Grant active 1977-1980: Battelle Research Institute, $10,000, Physical and Electrochemical Properties of Artificial Lipid Bilayers.

RHODES, W. GALE (b. 1943) Assistant Professor. B.S., 1965, North Carolina State University, Ph.D., 1971, University of North Carolina. Bio-organic Chemistry. Chemical evolution, origin of proteins.

Seven publications, 1976-1980.

R. A. Lindberg, W. G. Rhodes, L. D. Eirich, and H. Drucker, "Regulation in Neurospora crassa of an Induced Exocellular Acid Protease," Battelle Pacific Northwest Laboratory Annual Report, Part I, 266 (1979).

W. G. Rhodes, L. D. Eirich, R. A. Lindberg, and H. Drucker, "Partial Purification of Exocellular Acid Protease Induced from Neurospora crassa," Battelle Pacific Northwest Laboratory Annual Report, Part I, 263 (1979).

W. G. Rhodes,*R. Smock and *L. Brown, "Ever-more-Sophisticated Lies About Bonding: A Minicourse in HMO Theory for Undergraduates," J. Chem. Educ., 54, 687 (1977).

W. G. Rhodes and *D. W. Taylor, "Simulation of Enzyme Action on the Programmable Calculator," J. Chem. Educ., 57, 620 (1980).

TEMPLETON, J. CHARLES (b. 1943) Associate Professor and Chairman. B.A., 1965, College of Wooster, M. A., 1967, Wesleyan University, Ph.D., 1970, University of Colorado. Inorganic and Analytical Chemistry. Kinetics and mechanisms of reactions of transition metal complexes in aqueous solution; studies in concentrated acid media.

TODD, JAMES S. (b. 1935) Professor. B.A., 1957, Pomona College, Ph.D., 1961, University of Rochester. Organic Chemistry. Natural products.

WILLIAMS COLLEGE
Williamstown, MA 01267

Fall 1980 ug enrollment 2024
Degrees offered A.B.
Telephone (413) 597-2323

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 9.4. 2. Support staff, FTE's: Sec'y 2 Stockrm 1 Technical 0
3. 1980 seniors & their placement: Total 38 Grad. school 7 Industry 3 Professional schools 20 Other 8.
4. Senior majors, average past five years: 35.
5. Undergraduates involved in research, average past five years: Academic year 11 Summer 4
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:
   1 NSF predoctoral fellowship, 1978, Andrew W. Gross.

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 35,000
2. Instrumentation:

NMR	P-E R12B	GC Varian 1420, Varian 1860
IR	two P-E 237B	Polarimeter P-E 241
UV-VIS	two Cary 219, Cary 14, Beckman DB-G	Ultracentrifuge Beckman L
ESR	Varian E-3	Spectrofluorimeter P-E 3000
LC	Waters 202/401	
AA	P-E 306	

3. Library resources: CA? yes Volume indices? yes Collected indices? yes Total journal subscriptions? 40 Computer literature search service? no Separate chemistry or science library? yes Librarian? no Standing orders for review series and annual reviews (past five years) 32.

4. Computer facilities: Univac 1100/60
   two APPLE II microcomputers

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research:
   Approx. $10000/yr. for apparatus and chemicals.

2. Departmental grants:

Shell Corporation	$2000
Du Pont College Science Grant	7000
Alcoa Foundation	10600

3. Faculty teaching loads: Contact hours 11 Load credit for research? no.

4. Sabbatical or leave support for research:
   sabbatical leave (tenured faculty): 75% salary full yr., 100% salary half yr., every 7th yr.; or 75% salary half yr., every 4th yr.
   assistant prof. leave (nontenured): 100% salary half yr.; once during 2nd appnt.

FACULTY PROFILE

CHANDLER, DEAN W. (b. 1944) Assistant Professor. B.S., 1967, Harvard University, Ph.D., 1973, Northwestern University. Physical and Analytical Chemistry. Spectroscopy.

A. R. Skinner and D. W. Chandler, Spectroscopy with Supersonic Jets, Am. J. Phys., 48, 8 (1980).

L. Wharton, R. E. Smalley, D. H. Levy, and D. W. Chandler, Van der Waals Complexes of Tetrazine. J. Chem. Phys., 68, 2487 (1978).

D. W. Chandler, L. Wharton, R. E. Smalley, and D. H. Levy, Nozzle Jet Spectroscopy of Tetrazine, J. Mol. Spectry., 66, 375 (1977).

CHANG, RAYMOND (b. 1939) Professor. B.Sc., 1962, London University, Ph.D., 1966, Yale University. Physical Chemistry. Magnetic resonance, chemical kinetics and protein conformation.

R. Chang, Chemistry, Random House, Inc., New York. 1981

R. Chang. Physical Chemistry With Applications to Biological Systems, Second Edition, Macmillan Publishing Co., New York, 1981.

R. Chang, *S. M. Vlasak, and J. H. Markgraf, Electron Spin Resonance Study of an Unusually Tight Ion-Pair, Chem. Commun., 682 (1977).

R. Chang and W. R. Moomaw, Phosphorescence and Electron Paramagnetic Resonance Study of a Photoexcited Triplet State: Advanced Undergraduate Experiment in Molecular Physics, Am. J. Phys., 44, (1976).

R.Chang, Physical Chemistry with Applications to Biological Systems, Macmillan Publishing Co., New York, 1977.

CRONLUND, MALCOLM (b.1939) Visiting Lecturer. B.A., 1961, Pennsylvania State University, Ph.D., 1972, University of Iowa. Biochemistry. Research interests involve structure and function of proteins.

J. A. Hardin, M. Cronlund, E. Harber, and K. J. Bloch, Activation of Blood Clotting in Patients with Systemic Lupus Erythematosus: Relationship to Disease Activity. Amer. J. Med., 65, 430 (1978).

M. Cronlund, J. Hardin, J. Burton, L. Lee, E. Haber, and K. J. Bloch. Fibrinopeptide A in Plasma of Normal Subjects and in Patients with Disseminated Intravascular Coagulation and Systemic Lupus Erythematosus, J. Clin. Invest., 58, 142 (1976).

KAPLAN, LAWRENCE J. (b. 1943) Associate Professor. B.S., 1964, University of Pittsburgh, Ph.D., 1970, Purdue University. Biochemistry. Purification and characterization of plasma proteins, coagulation factor IX and albumin: environment of amino acid residues in proteins as a function of conformation.

KAPLAN, LAWRENCE J., cont'd

Seven publications, 1976-1980.

*R. S. Kamer, *A. R. Turi, L. J. Kaplan, and P. R. Solomon, Increased Meso-Limbic Dopamine Binding Following Chronic Haloperidol Treatment, Psychopharmacologia, in press.

P. R. Solomon, *G. L. Nichols, *J. M. Kiernan, *R. S. Kamer, and L. J. Kaplan, Differential Effects of Median and Dorsal Raphe Lesions in the Rat: Latent Inhibition and Septo-Hippocampal Serotonin Levels., J. Comparative and Physiological Psychology, 4, 145 (1980).

*C. N. Cornell and L. J. Kaplan, Spin-Label Studies of the Sulfhydryl Environment in Bovine Plasma Albumin. 2. The Neutral Transition and the A. Isomer, Biochemistry, 17, 1755 (1978).

*C. N. Cornell and L. J. Kaplan, Spin-Label Studies of the Sulfhydryl Environment in Bovine Plasma Albumin. 1. The N-F Transition and Acid Expanison, Biochemistry, 17, 1750 (1978).

D. M. Quadaguo, *S. Albelda, T. E. McGill, and L. J. Kaplan, Intracranial Cyclohexamide: Effect on Male Mouse Sexual Behavior and Plasma Testosterone, Pharmacology, Biochemistry and Behavior, 4, 185 (1976).

KLEIER, DANIEL A. (b. 1945) Assistant Professor. B.A., 1967, Bellarmine College. Ph.D., 1971, University of Notre Dame. Physical and Theoretical Chemistry. Experimental studies of intramolecular rearrangements using NMR spectroscopy and studies of the molecular and electronic structure of low valent mercury compounds using UV spectroscopy. Electronic structure calculations on a wide variety of compounds.

Eleven publications, 1976-1980.

D.A. Kleier, D.A. Dixon, and W.N. Lipscomb, Fluxional Behavior in $B_{11}H_{11}^{2-}$. A Theoretical Study, Inorg. Chem., 17, 166 (1978).

D. A. Kleier and W. R. Wadt. Molecular Structure of Mercurous Halides: Hg_2F_2 and Hg_2Cl_2, J. Am. Chem. Soc., in press.

D. A. Kleier. J. Bicerano and W. N. Lipscomb, Stereochemical Rigidity in B_4H_4 and B_4F_4. A Theoretical Study, Inorg. Chem., 19, 216 (1980).

K. A. Jewett and D. A. Kleier. A FORTRAN Program for Plotting Dot Diagrams of Electron Density. J. Chem. Ed., 55, 451 (1978).

D. A. Kleier and W. N. Lipscomb, Molecular Orbital Study of Polypeptides. Conformational and Electronic Structure of Polyglycine, Int. J. Quantum Chem., Quantum Biology Symposium, No. 4, 73 (1977).

Grant Active: Camille and Henry Dreyfus Teacher-Scholar Award, 1979-1984, $35,000.

MARKGRAF, J. HODGE (b. 1930) Professor. A.B., 1952, Williams College, Ph.D., 1957, Yale University. Organic Chemistry. Strained heterocyclic systems, synthesis and correlations of physical properties; insect pheromones.

MARKGRAF, J. HODGE, cont'd

J. H. Markgraf, *J. H. Antin, *F. J. Walker, and *R. A. Blatchly, 6,7-Dihydrocyclobuta[g]quinoline, J. Org. Chem., 44, 3261 (1979).

J. H. Markgraf and T. A. Newton, Preparation and Rearrangement of 2,3-Diphenyl-2,3-butanediol, J. Chem. Educ., 56, 344 (1979).

J. H. Markgraf and *M. F. Anton, Solvolysis of 1-Haloadamantanes, J. Chem. Educ., 54, 773 (1977).

R. Chang, *S. M. Vlasak, and J. H. Markgraf, Electron Spin Resonance Study of an Unusually Tight Ion-Pair, Chem. Commun., 682 (1977).

J. H. Markgraf, *M. S. Ibsen, *J. B. Kinney, *J. W. Kuper, *J. B. Lurie, *D. R. Marrs, *C. A. McCarthy, *J. M. Pile, and *T. J. Pritchard, Decarbalkoxylation of Isohexylmalonates, J. Org. Chem., 42, 2631 (1977).

MOOMAW, WILLIAM R. (b.1938) Professor. B.S., 1959, Williams College, Ph.D., 1965, Massachusetts Institute of Technology. Physical Chemistry. Electronic Spectroscopy and theory of small organic molecules, molecular complexes, the radiative and radiationless deactivation of electronic excited states, environmental and public policy issues.

R. D. Kavanaugh and W. R. Moomaw, Inducing Formal Thought in Introductory Chemistry students, accepted for publication in J. Chem. Ed.

*M. F. Anton and W. R. Moomaw, Luminescence and Hydrogen Bonding in Quinoline and Isoquinoline, J. Chem. Phys., 66, 1808 (1977).

W. R. Moomaw and *M. F. Anton, Luminescence Studies of Proton Transfer in the Excited Electronic States of Hydrogen Bonded Quinoline and Isoquinoline, J. Phys. Chem., 80, 2243 (1976).

R. Chang and W. R. Moomaw, A Phosphorescence and Electron Paramagnetic Resonance Study of a Photoexcited Triplet State, Am. J. Phys., 44, 455 (1976).

RICCI, JOHN S., JR. (b. 1940) Associate Professor. A.B., 1962, American International College, M.A., 1963, Columbia University, Ph.D., 1969, State University of New York at Stony Brook. Physical and Inorganic Chemistry. Structural chemistry of transition metal complexes and organo-phosphates.

L. C. Andrews, B. R. Deroski, and J. S. Ricci, Jr., An Improved Crystal and Molecular Structure of Guanidinium Hydrogen Oxalate Monohydrate, J. of Crystal and Molecular Structure, 9, 163(1979).

F. Ramirez, J. S. Ricci, Jr., J. Maracek, H. Okazaki, and M. Pike, A new Phosphorus Heterocycle. Crystal and Molecular Structure of 7,8-Dimethyl-5-methoxy-5-oxo-λ^5-5-phospha-6-oxaindolizine, J. Org. Chem., 43, 4996 (1978).

F. Ramirez, J. S. Ricci, Jr., et al., Crystal and Molecular Structure of Phosphates, 8, J. Org. Chem., 43, 3635 (1978).

F. Ramirez, J. S. Ricci, Jr., et al., Crystal and Molecular Structure of a Furanose Five-Membered Cyclic Phosphodiester, J. Am. Chem. Soc., 99, 5135 (1977).

F. Ramirez, J. S. Ricci, Jr., et al., Crystal and Molecular Structure of trans-Biphthalyl, $C_{16}H_8O_4$, J. Org. Chem., 41, 3909 (1976).

SKINNER, JAMES F. (5. 1941) Professor and Chairman. B.A., 1961, Williams College, Ph.D., 1964, Yale University. Physical and Inorganic Chemistry. Electrochemistry, inorganic chemistry.

J. F. Skinner, A. Glasel, L.-C. Hsu, and B. L. Funt, Rotating Ring Disk Electrode Study of the Hydrogen Peroxide Oxidation of Fe(II) and Cu(I) in Hydrochloric Acid, J. Electrochem. Soc., 127, 315 (1980).

L. -C. Hsu, A. Glasel, J. F. Skinner, and B. L. Funt, Redox Reactions of $S_2O_8^{=}$ with Cu(I) and Fe(II) at the Rotating Ring Disk Electrode, J. Electrochem. Soc., 126, 939 (1979).

J. F. Skinner, Electrochemical Demonstation: Motor Driven by a Simple Galvanic Cell, J. Chem. Ed., 54, 619 (1977).

J. B. Kinney and J. F. Skinner, A Device for Easy Demonstration of Optical Activity and Optical Rotatory Dispersion, J. Chem. Ed., 54, 494 (1977).

TAYLOR, ALLEN (b. 1946) Assistant Professor. B.S., 1967, City College of the City of New York, Ph.D., 1973, Rutgers University. Biochemistry and Organic Chemistry. Studies on molecular mechanism and control of proteolysis. Characterization of leucine aminopeptidase in various tissues.

A. Taylor, *H. C. Oettgen, *R. E. Berry, and *S. E. Stred, Leucine Aminopeptidase (Hog Lens): Purification and Preliminary Characterization, Proceedings for the International Society for Eye Research, p. 128, 1980.

A. Taylor, A. Wlodawer, and F. H. Carpenter, Leucine Aminopeptidase (Bovine Lens): An Electron Microscopic Study, J. Ultrastruct. Rsch., 68, 92 (1979).

F. Jurnak, A. Rich, L. von Loon Klaassen, H. Bloemendahl, A. Taylor, and F. H. Carpenter, Preliminary X-Ray Study of Leucine Aminopeptidase (Bovine Lens): An Oligomeric Metallownzyme, J. Mol. Biol., 112, 149 (1977).

Grants from National Institutes of Health, Massachusetts Lions Eye Research Fund and Research Corporation totalling about $50,000/year.

WARREN, HAROLD H. (b. 1922) Professor. B.S., 1944, University of New Hampshire, M.S., 1947, Ph.D., 1950, Princeton University. Organic Chemistry. Synthesis of natural products and structural variants.

THE COLLEGE OF WOOSTER
Wooster, Ohio 44691

Fall 1980 ug enrollment 1924
Degrees offered B.A.
Telephone (216) 264-1234, Ext. 418, 437, 258

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 8. 2. Support staff, FTE's: Sec'y 1.5 Stockrm 1 Technical .5
3. 1980 seniors & their placement: Total 32 Grad. school 10 Industry 7 Professional schools 9 Other 6.
4. Senior majors, average past five years: 30.
5. Undergraduates involved in research, average past five years:
   Academic year 30 Summer 7
6. Master's program? No Master's degrees conferred, average past five years 0
7. National honors, undergraduate or senior majors, past five years:
   None

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 25,000
2. Instrumentation:
   1) Beckmann 700 Raman spectrometer
   2) Cary 14 spectrophotometer
   3) Hewlett-Packard 5830 gas chromatograph
   4) Beckman Spinco 120C amino acid analyzer
   5) Varian T-60 nuclear magnetic resonance spectrometer
   6) Cary 60 spectropolarimeter
   7) Perkin-Elmer 283 infrared spectrometer
   8) Cary 210 spectrophotomete
   9) Varian EM-600 mass spectrometer
   10) Varian 5000 high performance liquid chromatograph
3. Library resources: CA? Yes Volume indices? Yes Collected indices? Yes Total journal subscriptions? 47 Computer literature search service? Yes Separate chemistry or science library? Yes Librarian? No Standing orders for review series and annual reviews (past five years) 21.
4. Computer facilities: Connected to computer center at Battelle Memorial Institute (CDC 6600, CYBER 73); also Digital Equipment PDP-11 minicomputer and Apple II+.

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: $6,000
2. Departmental grants:
   NSF-URP, $10,180; Du Pont, $7,000; Dreyfus, $8,000; Monsanto, $5,000
3. Faculty teaching loads: Contact hours 11* Load credit for research? No (but credit is given for supervising student research)
4. Sabbatical or leave support for research: Research leave every fifth year at full salary.

FACULTY PROFILE

BORDERS, CHARLES L., JR. (b. 1942) Professor. B.A., 1964, Bellarmine, Ph.D., 1968, California Institute of Technology. *Biochemistry*. Protein chemistry, chemical modification of proteins; the roles of various amino acid residues at enzyme active sites, especially the role of arginine; development of new reagents for the chemical modification of proteins.

Fourteen publications, 1976-80.

C. L. Borders, Jr. and J. T. Johansen, "Essential Arginyl Residues in Cu,Zn Superoxide Dismutase from Saccharomyces Cerevisiae," *Carlsberg Res. Comm.* *45*, 185 (1980).

C. L. Borders, Jr., *L. J. Pearson, *A. E. McLaughlin, *J. Vasiloff, *M. E. Gustafson, *F. Y. An, and *D. J. Morgan, "A Chromophoric Reagent for Arginyl Residues in Proteins," *Biochim. Biophys. Acta* *568*, 491 (1979).

*A. L. George, Jr. and C. L. Borders, Jr., "Essential Carboxyl Residues in Yeast Enolase," *Biochem. Biophys. Res. Comm.* *87*, No. 59 (1979).

C. L. Borders, Jr., *K. L. Cipollo, *J. F. Jorkasky, and K. E. Neet, "The Role of Arginyl Residues in Yeast Hexokinase PII, *Biochemistry* *17*, 2654 (1978).

J. F. Riordan, *K. D. McElvany, and C. L. Borders, Jr., "Arginyl Residues: Anion Recognition Sites in Enzymes," *Science* *195*, 884 (1977).

Grant active 1979-80: PRF Type B, $13,000, Chromophoric Arginine Reagents.

BROMUND, RICHARD H. (b. 1940) Professor. B.A., 1962, Oberlin, Ph.D., 1968, Pennsylvania State. *Analytical Chemistry*. Water quality, oceanography.

O. C. Zafiriou, M. McFarland, and R. H. Bromund, "Nitric Oxide in Seawater," *Science* *207*, 637 (1980).

T. R. Williams and R. H. Bromund, "The Analytical Textbook Situation: Can a Textbook Present Analytical Chemistry as It Really Is?," *J. Chem. Educ.* *56*, 98 (1979).

*M. L. Nicholas, D. L. Powell, T. R. Williams and R. H. Bromund, "Reference Raman Spectra of DDT and Five Structurally Related Pesticides and of Five Pesticides Containing the Norbornene Group," *J. Assn. of Official Analytical Chemists* *59*, 197 (1976).

R. H. Bromund, *N. W. Bower and R. H. Smith, "Inclusion in Ancient Ceramics; An Approach to the Problem of Sampling for Chemical Analysis," *Archaeometry* *18*, 218 (1976).

GAUS, PAUL L. (b. 1949) Assistant Professor. B.S., 1971, Miami University (Ohio), Ph.D., 1975, Duke University. Inorganic Chemistry. Electron and energy transfer reactions of transition metal compounds; the synthesis of ligand-bridged binuclear compounds of chromium, molybdenum, and tungsten; photosubstitution reactions of carbonyl compounds of chromium, and tungsten; ^{13}C-NMR of heterocyclic derivatives of metal carbonyls.

Seven publications, 1976-80.

P. L. Gaus and *J. L. Villanueva, "Direct Determinations of the Ion Pairing Equilibrium Constant and First-Order Rate Constant for Outer Sphere Electron Transfer Reactions," J. Am. Chem. Soc., 102, 1934 (1980).

J. J. Jwo, P. L. Gaus, and A. Haim, "Intramolecular Electron Transfer from Pentacyanoferrate(II) to Pentaamminecobalt(II) Mediated by Various 4,4'-Bipyridines," J. Am. Chem. Soc., 101, 6189 (1979).

P. L. Gaus, A. Haim, and F. Johnson, "The Synthesis of Bis (4-pyridyl)methane," J. Org. Chem. 42, 564 (1977).

A. L. Crumbliss and P. L. Gaus, "The Synthesis and Characterization of Neutral Cyano-Bridged Dicobaloximes. (Alkyl)-cobaloxime-u-cyano-(ligand)cobaloxime," Inorg. Chem., 15, 2080 (1976).

P. L. Gaus and A. L. Crumbliss, "C-13 NMR Spectra of Cyanocobaloximes Containing C-13 Labeled Cyanide," Inorg. Chem., 15, 739 (1976).

Grant active, 1980-1982: Research Corporation Cottrell College Science Grant, $14,650, The Synthesis and Characterization of Ligand-Bridged Binuclear Transition Metal Carbonyl Compounds.

Grant active, 1980-1981: The National Science Foundation-LOCI, $15,600, The Incorporation of the Instruction of Computer-Based Literature Searching Methods into Existing Programs of Independent Study in Chemistry.

HAYNES, LeROY W. (b. 1934) Professor. B.A., 1956, Drew University, Ph.D., 1961, University of Illinois. Organic Chemistry. Synthesis and reactions of heterocyclic compounds, isolation and characterization of natural products.

Eight publications, 1976-80.

M. Goetz, D. F. Wiemer, L. W. Haynes, J. Meinwald, and T. Eisner, "Lucibufagins. Part III. 11-Oxo- and 12-Oxo-bufalins, Defensive Steroids from the Fireflies Photinus ignitus and P. marginellus (Coleoptera: Lampyridae)," Helvetica Chimica Acta, 62, Fasc. 5, 1396 (1979).

T. Eisner, D. F. Wiemer, L. W. Haynes, and J. Meinwald, "Lucibufagins: Defensive Steriods from the Fireflies Photinus ignitus and P. marginellus," Proceedings of the National Academy of Science, 75, 905 (1978).

L. W. Haynes and D. L. Powell, "Creative Chemistry," Teacher, 94, 112 (1977).

T. R. Williams and L. W. Haynes, "An Experiment in the Characterization of Coordination Compounds," J. Chem. Educ. 54, 246 (1977).

R. Pettit and L. W. Haynes, "Carbonium Ions Pi-complexed to Metal Atoms," Carbonium Ions, Vol. 5, 2263 (1976).

HELLWIG, LOUISE C. (b. 1949) Visiting Assistant Professor. B.A., 1971, Swarthmore, Ph.D., 1978, Wisconsin. Organic Chemistry. Synthesis of allenamines; ring expansions.

POWELL, DAVID L. (b. 1936) Professor and Chairman. B.A., 1958, Oberlin, Ph.D., 1962, Wisconsin. Physical Chemistry. Vibrational spectroscopy, conformational analysis.

Fifteen publications, 1976-80.

D. L. Powell, *L. Popovic, P. Klaeboe, and C. J. Nielsen, "The Vibrational Spectra and Structure of Diiminosuccinonitrile and N,N'-dichlorodiiminosuccinonitrile," Spect. Acta, 36A, 29 (1980).

J. E. Gustavsen, P. Klaeboe, C. J. Nielsen and D. L. Powell, "The Vibrational Spectra and Conformation of 1,2-Dicyanotetrafluoroethane," Spect. Acta, 35A, 109 (1979).

R. West, L. S. Wilson, and D. L. Powell, "Basicity of Siloxanes, Alkoxysilanes and Ethers Toward Hydrogen Bonding," J. Organometallic Chemistry, 178, 5 (1979).

D. L. Powell and P. Klaboe, "Conformation and Vibrational Spectra of 1,1,2-Trichloro-2,3,3-trifluorocyclobutane," Acta Chem. Scand., A 32, 71 (1978).

D. L. Powell, P, Klaboe, A. Phongsatha, B. N. Cyvin, S. J. Cyvin, and H. Hopf, "Conformation and Vibrational Spectra of 1,5-Hexadiyne (Bipropargyl)," J. Mol. Struct., 41, 203 (1977).

Grant active, 1978-80: Research Corporation Cottrell College Science Grant, $11,575, Vibrational Spectra and Conformational Behavior of Cyclobutanes at High Pressure.

REINHEIMER, JOHN D. (b. 1920) Professor. A.B., 1942, Kenyon College, M.A., Ph.D., 1944, 1949, Johns Hopkins University. Organic Chemistry. Reaction rates, protein modification reagents.

J. D. Reinheimer, *L. L. Mayle, and *G. G. Dolnikowski, "Reaction of 2-Halo-5-nitropyridines with Hydroxide Ion in Dimethyl Sulfoxide," J. Org. Chem., 45, 3097 (1980).

*S. Sisodia, *R. D. Martz, *N. Bosworth, *G. Lammert, and J. D. Reinheimer, "The Synthesis of a Protein Modifying Agent. A Water-Soluble Stable Free Radical," Can. J. Chem., 58, 714 (1980).

J. T. Gerig, J. D. Reinheimer, and R. H. Robinson, "Modification of Human Serum Albumin with N-(2,5-Dinitro-4-fluorophenyl)-4-amino-2, 2,6,6-tetramethylpiperidinooxy Radical," Biochim. Biophys. Acta, 579, 409 (1979).

J. T. Gerig, K. E. Kats, and J. D. Reinheimer, "Reactions of 2,6-Dinitro-4-trifluoromethylbenzenesulfonate with Human Serum Albumin," Biochim. Biophys. Acta, 534, 196 (1978).

WILLIAMS, THEODORE R. (b. 1930) Professor. B.S., 1952, Howard University, M.S., 1954, Pennsylvania State University, Ph.D., 1960, University of Connecticut. Analytical Chemistry. The analysis of trace elements in biological tissues, particularly human lenses and teeth; the development of new analytical procedures using instrumental techniques.

T. R. Williams and R. H. Bromund, "The Analytical Textbook Situation: Can a Textbook Present Analytical Chemistry as It Really Is?," J. *Chem*. *Educ*. *56*, 98 (1979).

T. R. Williams and L. W. Haynes, "An Experiment in the Characterization of Coordination Compounds," *J*. *Chem*. *Educ*. *54*, 246 (1977).

*M. L. Nicholas, D. L. Powell, T. R. Williams, *R. Q. Thompson, and *N. H. Oliver, "Reference Raman Spectra of Eleven Miscellaneous Pesticides," *J*. *Assoc*. *Off*. *Anal*. *Chem*., *59*, 1266 (1976).

*M. L. Nicholas, D. L. Powell, T. R. Williams, and *S. R. Huff, "Reference Raman Spectra of Ten Phosphorus-Containing Pesticides," *J*. *Assoc*. *Off*. *Anal*. *Chem*., *59*, 1071 (1976).

*M. L. Nicholas, D. L. Powell, T. R. Williams and R. H. Bromund, "Reference Raman Spectra of DDT and Five Structurally Related Pesticides and of Five Pesticides Containing the Norbornene Group," *J*. *Assoc*. *of* *Off*. *Anal*. *Chem*., *59*, 197 (1976).

XAVIER UNIVERSITY of LA
New Orleans, LA 70125

Fall 1980 ug enrollment 2003
Degrees offered B.S.
Telephone (504) 486-7411

DEPARTMENT PROFILE

STUDENT, FACULTY & STAFF BASE

1. Faculty, FTE: 8 . 2. Support staff, FTE's: Sec'y 1 Stockrm 1 Technical ____
3. 1980 seniors & their placement: Total 13 Grad. school 2 Industry 1
Professional schools 10 Other - .
4. Senior majors, average past five years: 10 .
5. Undergraduates involved in research, average past five years:
Academic year 6 Summer 4 on campus, 10 off campus
6. Master's program? No Master's degrees conferred, average past five years: N/A
7. National honors, undergraduate or senior majors, past five years:
Danforth Fellowship - Warren Welthers 1978
MARC Fellowship - Jacinta Williams 1980

FACILITY, LIBRARY & EQUIPMENT BASE

1. Bldg. space Ft^2 9000
2. Instrumentation:

NMR: Varian EM360 & EM300
IR: Perkin-Elmer & Beckman
GC: Varian & Perkin-Elmer
UV: Bausch & Lomb 100
Cary 14
Turner Fluorescence
Perkin-Elmer HPLC
Sargent Polarograph
Varian EPR

3. Library resources: CA? Yes Volume indices? Yes Collected indices? No Total journal subscriptions? 30 Computer literature search service? Yes Separate chemistry or science library? No Librarian? -- Standing orders for review series and annual reviews (past five years) ____.

4. Computer facilities: HP3000, Tektronix and Apple, Varian

SUPPORT BASE (1979-80 ACADEMIC YEAR - 1980 SUMMER)

1. Internal support for research: Project grants, Travel expenses, chemical about $3000/yr

2. Departmental grants: MBS, Olin, MARC

3. Faculty teaching loads: Contact hours 12 Load credit for research? varies .

4. Sabbatical or leave support for research: Arranged in accord with University policy- one semester full salary; entire academic year, one half of year's salary. Eligible after 6 years of service.

FACULTY PROFILE

BURKE, RICHARD T. (b. 1939) Ass't. Professor. B.S., 1961, University of Notre Dame; M.A., 1966, Boston University; Ph.D., 1980, University of the Pacific. *Physical Chemistry*. Reactions of excited state oxygen atoms, $O(^1D)$; spectroscopic studies of photochemical reactions in low temperature matrices.

CARMICHAEL, J.W., JR. (b. 1940) Professor. B.S., 1961, Eastern New Mexico University; Ph.D., 1961, University of Illinois, Urbana. *Physical Chemistry*. Mechanisms for making science-related careers more accessible for minority students.

J.W. Carmichael, J. Halless, J. Hunter, L. Jones, M.A. Ryan, and H. Vincent, "Project SOAR: A Pre-Freshman Summer Program for Minority Science Majors," *The American Biology Teacher*, *42*, 169 (1980).

J.W. Carmichael, M.A. Ryan, and D. Robinson, "A Piagetian-Based General Chemistry Laboratory Program for Science Majors," *J. Chem. Ed.*, *57*, 642 (1980).

J.W. Carmichael, A. Whimbey, L.W. Jones, J. Hunter, and H. Vincent, "Teaching Critical Reading and Analytical Reasoning in Project SOAR," *Journal of Reading*, *24*, 5 (1980).

J.W. Carmichael, M.A. Ryan, and A. Whimbey, "Cognitive Skills Oriented PSI in General Chemistry," *Journal of Developmental and Remedial Education*," *3*, 4 (1979).

J.W. Carmichael, Jr., *Study Guide for Basic Chemistry* to accompany text by Roach and Leddy, McGraw-Hill Book Company, 1979.

MALMSTROM, SR. MARY CARL (b. 1925) Professor and Chairman. B.S. 1954, Villanova University, M.S. 1965, Loyola University, New Orleans, LA, Ph.D., 1972, University of Arkansas, Fayetteville. *Inorganic Chemistry* and *Analytical Chemistry*. Structure determination by x-ray crystallography; enzyme electrodes.

PRICE, LEONARD (b. 1933) Professor. B.S., 1957, Xavier University of Louisiana, Ph.D., 1962, Notre Dame University, Indiana. *Organic Chemistry*, *Biochemistry*. Copper and Nickel Salicylaldimine chelates for study as lubricating oil antioxidants. Synthesis of surfactants for use in enhanced petroleum recovery.

SEVENAIR, JOHN P. (b. 1943) Associate Professor. B.S., 1965, M.I.T., Ph.D., 1970, University of Notre Dame. *Organic Chemistry*. Geochemistry of humic substances, natural products, improvements in teaching organic chemistry.

J.P. Sevenair, "The Non-Vertical Stalactites of Dan-yr-Ogof," *NSS News*, *36*, 240 (1978).

J.P. Sevenair, "Employing Behavioral Objectives and Drill to Improve Student Comprehension and Relation in Organic Chemistry at Xavier University," *Minority Institutions Curriculum Exchange Conference Proceedings*, 17 (1979).

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Lutton, J.K., Kenyon C.
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Martin, W.B., Jr., Union C.
Mateer, R.A., Richmond, U. of
Mattson, B.M., Creighton U.
Mayo, D.W., Bowdoin C.
Mcanally, J.S., Occidental C.
McCarroll, W.H., Rider C.
McCarthy, P.J., Canisius C.
McConnell, M., Point Loma C.
McCord, T.J., Abilene Christian C.
McGrath, M.G., Holy Cross, C. of the
McKinney, P.C., Wabash C.
McKone, H.T., St. Joseph C.
McMaster, P.D., Holy Cross, C. of the
McMillan, C.A., Illinois Benedictine C.
McQuigg, R.D., Ohio Wesleyan U.
Mehlhaff, L.C., Puget Sound, U. of
Mehne, L.F., Calvin C.
Meister, J.J., Southern Methodist U.
Melford, S.S., DePaul U.
Meyer, E.E., DePaul U.
Michaelis, C.I., Dayton, U. of
Michel, L.A., Colorado C., The
Michiels, L.P., Manhattan C.-C. of Mt. St. Vincent
Miessler, G.L., St. Olaf C.
Miller, H.B., Wake Forest U.
Miller, H.K., Manhattan C.-C. of Mt. St. Vincent
Miller, J.M., Drew U.
Miller, T.G., Lafayette C.
Miller, T.L., Ohio Wesleyan U.
Miller, V.R., Roanoke C.
Mills, N.S., Carleton C.
Mir, Q.C., Hendrix C.
Mitchell, D.J., Juniata C.
Mitra, G., King's C.
Moe, O.A., Lebanon Valley C.
Mohrig, J.R., Carleton C.
Moomaw, W.R., Williams C.
Moran, W.J., Drew U.
Morrill, T.C., Rochester Inst. of Tech.
Mortimer, R.G., Southwestern @ Memphis
Moyer, R.O., Jr., Trinity C.
Mucci, J.F., Vassar C.
Muldoon, W.P., St. John's U.-C. of St. Benedict
Mungall, W.S., Hope C.
Murphy, Sr. M.E., St. Joseph C.
Murphy, T.J., DePaul U.
Musselman, R.L. Principia C.
Myers, W.H., Richmond, U. of
Myhre, P.C., Harvey Mudd C.
Nagle, J.K., Bowdoin C.
Narske, R.M., Augustana C. (IL)
Nathan, L.C., Santa Clara, U. of
Neft, Sr. N., St. John's U.-C. of St. Benedict
Neidig, H.A., Lebanon Valley C.
Neithamer, R.W., Eckerd C.
Nelson, G.L., Saint Joseph's U.
Nemeroff, N.H., Phil. C. of Tex. & Sci.
Nesset, B.L., Pacific Lutheran U.
Neumiller, H.J., Knox C.
Newland, R.J., Lafayette C.
Newman, P., Manhattan C.-C. of Mt. St. Vincent
Nicksic, T.D., Pacific Lutheran U.
Niemczyk, M.P., Wheaton C. (IL)
Noftle, R.E., Wake Forest U.
Nolan, S.M., Bucknell U.
Novak, R.L., DePaul U.
Nowell, J.W., Wake Forest U.
Nutt, W.R., Davidson C.
Nygaard, D.D., Bates C.
O'Brien, J.M., Middlebury C.
O'Connell, E.J., Fairfield U.
Odom, D.G., Cornell C. (IA)
Oelkers, J.A., Christian Brothers C.
Oetgen, R.R., Roanoke C.
Ogren, P.J., Earlham C.
Olsen, R.J., Wabash C.
Olsen, R.L., Hamline U.
Ordman, A.B., Beloit C.
Ostercamp, D.L., Concordia C.
Padron, J.L., Drury C.

Page, D.S., Bowdoin C.
Panasenko, S.M., Pomona C.
Pappenhagen, J.M., Kenyon C.
Park, C.B., Newberry C.
Parker, L.R., Jr., Vassar C.
Parker, W.E., Gettysburg C.
Parson, K.A., Macalester C.
Pasterczyk, W.R., DePaul U.
Pasternack, R.F., Ithaca C.
Patterson, C.S., Furman U.
Peace, G.E. Jr., Holy Cross, C. of the
Pearson, M.S., Wheaton C. (MA)
Pearson, W.A., St. Olaf C.
Peterson, M.E., Augustana C. (IL)
Pfeiffer, R.J., Santa Clara, U. of
Phillips, D.A., Wabash C.
Piers, K., Calvin C.
Pillar, C.J., Benedictine C. (KS)
Pipal, R.J., Grinnell C.
Piper, J.U., Simmons C.
Pleva, M.A., Washington & Lee C.
Plummer, B.F., Trinity U.
Pool, E.L., Middlebury C.
Porterfield, W.W., Hampden-Sydney C.
Powell, D.L., Wooster, The C. of
Powell, W.A., Richmond, U. of
Price, L., Xavier U. of LA
Proctor, Z.G., Elizabethtown C.
Prout, F.S., DePaul U.
Pulito, A.M., Fairfield U.
Quaal, K.S., Union C.
Ramette, R.W., Carleton C.
Ramsey, B.G., Rollins C.
Ranck, J.P., Elizabethtown C.
Randall, W.J., Lewis and Clark C.
Rataiczak, R.D., Muskingum C.
Rausch, D.J., Illinois Benedictine C.
Raw, C.J.G., Saint Louis U.
Reed, R.E., Juniata C.
Reeder, R.R., Elizabethtown C.
Reeves, P.C., Abilene Christian C.
Reinbold, P.E., Bethany Nazarene C.
Reingold, I.D., Middlebury C.
Reinheimer, J.C., Wooster, The C. of
Ressner, E., Colgate U.
Rhodes, W.G., Whitman C.
Ricci, J.S., Jr., Williams C.
Ricci, R.W., Holy Cross, C. of the
Rice, B., Saint Louis U.
Rich, A.J., Franklin & Marshall C.
Richardson, D., Loma Linda U.
Riehl, A., St. Scholastica, C. of
Rioux, F.J., St. John's U.-C. of
St. Benedict
Rivlin, J., Phil. C. of Tex. & Sci.
Roberti, D.M., Saint Joseph's U.
Roberts, E.K., Middlebury C.
Roberts, J.L., Jr., Redlands, U. of
Rock, E.J., Wellesley C.
Root, C.A., Bucknell U.
Roper, G.C., Dickinson C.
Rosenfeld, S.M., Swarthmore C.
Rosenberg, R.M., Lawrence U.
Rosenthal, L.C., Santa Clara, U. of
Ross, M.R., St. John's U.-C. of
St. Benedict
Rossi, C.J., Chapman C.
Roth, E.A., Rider C.
Rousslang, K., Puget Sound, U. of
Rowland, A.T., Gettysburg C.
Rowland, T.V., Puget Sound, U. of
Roy, R.N., Drury C.
Runquist, O.A., Hamline U.
Russey, W.E., Juniata C.
Saar, R.A., Manhattan C.-C. of Mt.
St. Vincent
Sadurski, E.A., Ohio Northern U.
Sarneski, J.E., Fairfield U.
Sauls, F.C., King's C.
Scaife, C.W.J., Union C.
Scamehorn, R.G., Ripon C.
Schaefer, R.W., Union C.
Schaeffer, C.D., Jr., Elizabethtown C.
Schearer, W.R., Dickinson C.
Schettler, P.D., Jr., Juniata C.
Schilling, J.W., Trinity U.
Schoonmaker, R.C., Oberlin C.
Schreiber, J.L., Franklin & Marshall C.
Schuh, M.D., Davidson C.
Schultz, E., Carroll C.
Schwartz, A.T., Macalester C.
Scott, D.A., Drew U.
Scott, E.S., Ripon C.
Scott, F.L., Rochester Inst. of Tech.
Scouten, W.H., Bucknell U.
Searles, A.L., Manhattan C.-C. of Mt.
St. Vincent
Segal, B.G., Barnard C.
Seiwald, R.J., San Francisco, U. of
Settlemire, C.T., Bowdoin C.
Sevenair, J.P., Xavier U. of LA
Seymour, M.D., Hope C.
Shearer, G.O., Creighton U.
Sheats, J.E., Rider C.
Sheehan, W.F., Santa Clara, U. of
Sheeley, R.M. Dickinson C.
Sheffer, H.E., Union C.

Sheldon, H.R., II, Loma Linda U.
Shellhamer, D.F., Point Loma C.
Shen, Q., Colgate U.
Sheridan, P.S., Colgate U.
Sherma, J.A., Lafayette C.
Shideler, R.W., Hendrix C.
Shillington, J.K., Washington & Lee U.
Shoemaker, N.J., Phil. C. of Tex. & Sci.
Shoer, L.I., Lake Forest C.
Singer, S.S., Dayton, U. of
Sipe, H.J., Jr., Hampden-Sydney C.
Skinner, J.F., Williams C.
Slowinski, E.J., Macalester C.
Sly, W.G., Harvey Mudd C.
Smellie, R.H., Jr., Trinity C.
Smith, F.X., King's C.
Smith, H.A., Jr., Hampden-Sydney
Smith, J.G., Mt. Holyoke C.
Smith, J.P., Dallas, U. of
Smith, L.R., Oberlin C.
Smith, M.A., Bucknell U.
Smith, R.E., Occidental C.
Smith, R.N., Pomona C.
Snavely, F.A., Franklin & Marshall C.
Snipp, R.L., Creighton U.
Sobus, M.T., Saint Joseph's U.
Soderquist, J.A., San Francisco, U. of
Solsky, J.F., Creighton U.
Soltzberg, L.J., Simmons C.
Sowa, J.R., Union C.
Spangler, M.O.L., Elizabethtown C.
Spaziano, V.T., Saint Louis U.
Spencer, J.N., Franklin & Marshall U.
Spencer, B., Beloit C.
Spessard, D.R., Denison U.
Spessard, G.O., St. Olaf C.
Spitler, M.T., Mt. Holyoke C.
Sprowles, J.C., Bates C.
Stanislawski, D.A., Dayton, U. of
Stanton, R.E., Canisius C.
Stein, P.J., St. Scholastica, C. of
Steinmetz, W.E., Pomona C.
Stocker, F.B., Macalester C.
Stratton, W.J., Earlham C.
Strohl, A.N., Niagara U.
Strommen, D.P., Carthage C.
Strong, L.E., Earlham C.
Stuckey, J.E., Hendrix C.
Summerhays, K.D., San Francisco, U. of
Sutton, R., Knox C.
Suydam, F.H., Franklin & Marshall C.
Swallow, K.C., Wellesley C.
Swank, D.D., Pacific Lutheran U.
Swanson, R.A., Agnes Scott C.
Swartz, J.E., Grinnell C.
Sweeney, M.A., Santa Clara, U. of
Taber, R.L., Colorado C. The
Takacs, G.A., Rochester Inst. of Tech.
Takemura, K.H., Creighton U.
Tarr, D.A., St. Olaf C.
Tassin, J.D., Furman U.
Tatum, G.R., Loma Linda U.
Taylor, A., Williams C.
Taylor, M.A., Bradley U.
Taylor, S.K., Olivet Nazarene C.
Teague, M.W., Hendrix C.
Templeton, J.C., Whitman C.
Thomas, H.E., Erskine C.
Thompson, D.M., Austin C.
Thompson, D.S., Hampden-Sydney C.
Thompson, M.L., Lake Forest C.
Thompson, P.T., Swarthmore C.
Thurner, J.J., Colgate U.
Tobiason, F.L., Pacific Lutheran U.
Todd, J.S., Whitman C.
Tonn, S.J., Pacific Lutheran U.
Topham, R.A., Richmond, U. of
Towne, J.C., Dallas, U. of
Trachtman, M., Phil. C. of Tex. & Sci.
Tremelling, M.J., Vassar C.
Trumbull, E.R., Colgate U.
Trumbull, P.A., Colgate U.
Turner, J.J., Colgate U.
Trzupek, L.S., Furman U.
Uhlenhopp, E.L., Grinnell C.
VanDoorne, W., Calvin C.
VanEikeren, P., Harvey Mudd C.
VanHecke, G.R., Harvey Mudd C.
VanHorn, R.W., Franklin & Marshall C.
VanVerth, J.E., Canisius C.
Veening, H., Bucknell U.
Vellacio, F., Jr., Holy Cross, C. of the
Victor, J., Manhattan C.-C. of Mt. St. Vincent
Vidulich, G.A., Holy Cross, C. of the
Viste, A.E., Augustana C. (SD)
Voet, J.G., Swarthmore C.
Vogel, G.C., Ithaca C.
Vogt, D.E., Ohio Wesleyan U.
Vukanovic, V., Rochester Inst. of Tech.
Walker, R.G., Marietta C.
Wallace, W.J., Muskingum C.
Walsh, J.L., Lafayette C.
Walters, L.R., Lafayette C.
Wampler, D.L., Juniata C.
Warren, H.H., Williams C.

Wartman, A.M., Augustana C. (IL)
Wasacz, J.P., Manhattan C.-C. of Mt. St. Vincent
Watkins, R.J., Carroll C.
Watkins, S.R., Coe C.
Watt, W.J., Washington & Lee U.
Way, K., Augustana C., (SD)
Weaver, E.S., Mt. Holyoke C.
Webster, E.R., Wellesley C.
Weddle, G.H., Fairfield U.
Weick, C.F., Union C.
Weir, W.D., Reed C.
Weiss, L.C., Carleton C.
Werner, T.C., Union C.
Werth, R.G., Concordia C.
Wescott, L.D., Jr., Christian Brothers C.
Wesolowski, W.E., Illinois Benedictine C.
West, A.D., Lawrence U.
West, C.D., Occidental C.
White, D.H., Santa Clara U.
White, R.C., Drake U.
Whitney, G.S., Washington & Lee U.
Wick, L.B., Ohio Wesleyan U.
Wickham, P.P., Coe C.
Wilhelm, D.L., Ohio Northern U.
Wilkinson, T.J., Wheaton C. (IL)
Wilcox, M.F., Ithaca C.
Willeford, B.R., Bucknell U.
Williams, D.H., Hope C.
Williams, T.R., Wooster, The C. of
Williams, V.A., Chapman C.
Williamson, K.L., Mt. Holyoke C.
Wilson, L.Y., Loma Linda U.
Winkler, E.M., Illinois Benedictine C.
Winstead, M.B., Bucknell U.
Wintner, C.E., Haverford C.
Wise, J.H., Washington & Lee U.
Wolsey, W.C., Macalester C.
Wood, A., Puget Sound, U. of
Woods, J.D., Drake U.
Worsham, J.E., Richmond, U. of
Wubbels, G.C., Grinnell C.
Wulfsberg, G.P., St. John's U.-C. of St. Benedict
Wylie, P.L., Bates C.
Yoder, C.H., Franklin & Marshall C.
York, O., Jr., Kenyon C.
Yourtee, L.K., Hamilton C.
Zaletz, M.A., Augustana C. (SD)
Zapisek, W.F., Canisius C.
Zebolsky, D.M., Creighton U.
Zielinski, T.J., Niagara U.
Zimmerman, J.F., Wabash C.
Zurbach, E.P., Saint Joseph's U.

BACCALAUREATE ORIGINS OF Ph.D.'S IN CHEMISTRY
FOR PRIVATE PREDOMINANTLY UNDERGRADUATE COLLEGES

1967-1976			1920-1976	
Rank	Number	Institution	Rank	Number
1	63	Oberlin C/OH	1	286
2	62	Manhattan C/NY	10	113
3	60	Hope C/MI	2	166
4	57	Wooster, C of/OH	6	147
5	47	Canisius C/NY	20	95
"	47	St. Olaf C/MN	4	156
7	45	Bucknell U/PA	24	86
"	45	DePauw U/IN	5	155
"	45	Franklin & Marshall C/PA	3	161
NR	44	St. Louis U/MO	NR	104
10	43	Lafayette C/PA	14	101
11	41	Juniata C/PA	11	109
12	40	St. Peters C/NJ	40	71
"	40	Union C/NY	7	139
14	39	Harvey Mudd C/CA	93	42
"	39	Holy Cross, C of/MA	30	82
"	39	Kalamazoo C/MI	8	123
17	38	Carleton C/MN	13	108
"	38	LaSalle C/PA	47	67
19	36	Occidental C/CA	54	59
"	36	Rochester Inst. Tech/NY	71	49
21	35	Lebanon Valley C/PA	29	83
"	35	St. Thomas, C of/MN	18	96
23	33	Grinnell C/IA	20	95
24	32	Davidson C/NC	31	81
"	32	St. Josephs C/PA	44	68
"	32	Xavier U/OH	34	77
27	31	Dayton, U of/OH	53	61
"	31	St. Mary's C/MN	66	52
29	30	Bowdoin C/ME	42	69
"	30	Wabash C/IN	14	101
31	29	Calvin C/MI	20	95
"	29	John Carroll U/OH	83	46
"	29	Macalester C/MN	71	49
"	29	Reed C/OR	8	123
"	29	Williams C/MA	18	96
36	28	Fairleigh Dickinson U/NJ	107	37
"	28	Wheaton C/IL	35	76
38	27	Knox C/IL	36	74
"	27	Muhlenberg C/PA	57	58
40	26	Phil. C Pharm. & Sci/PA	32	80
41	25	Earlham C/IN	71	49
"	25	Gettysburg C/PA	41	70
"	25	Siena C/NY	104	38
"	25	Swarthmore C/PA	16	100
45	24	DePaul U/IL	51	63
"	24	Loras C/IA	59	57
"	24	Loyola C/MD	59	57
"	24	St. John's U/MN	62	55
"	24	Trinity C/CT	42	69
"	24	Valparaiso U/IL	75	48

Baccalaureate origins (con't)

51	23	Allegheny C/PA	27	84
"	23	King's C/PA	87	45
"	23	Marietta C/OH	62	55
"	23	Thiel C/PA	128	31
55	22	Bates C/ME	38	72
"	22	Bellarmine C/KY	120	33
"	22	Colorado C/CO	97	41
"	22	Ohio Wesleyan C/OH	28	84
"	22	Thomas More C/KY	134	29
"	22	Ursinus C/PA	54	59
61	21	Amherst C/MA	17	99
"	21	LeMoyne C/NY	134	29
"	21	Richmond, U of/VA	50	64
"	21	Rockhurst C/MO	120	33
NR	21	St. Francis C/PA	NR	31
"	21	Wittenberg U/OH	90	43
66	20	Augustana C/IL	36	74
"	20	Manchester C/IN	48	66
"	20	Mt. Holyoke C/MA	24	86
"	20	Ripon C/WI	107	37
70	19	Fairfield U/CT	160	26
"	19	Furman U/SC	93	42
"	19	Mississippi C/MS	59	57
"	19	Monmouth C/IL	24	86
"	19	Niagara U/NY	100	39
"	19	St. John Fisher C/NY	134	29
"	19	Scranton, U of/PA	71	49
77	18	Alfred U/NY	67	51
"	18	Augsburg C/MN	197	20
"	18	Hamline U/MN	67	51
"	18	Millsaps C/MS	107	37
"	18	St. Lawrence U/NY	90	43
"	18	Wake Forest U/NC	87	45
"	18	Washington & Lee U/VA	75	48
"	18	W. VA Wesleyan C/WVA	65	53
"	18	Wilkes C/PA	134	29
86	17	Albion C/MI	100	39
"	17	Bradley U/IL	57	58
"	17	Butler U/IN	93	42
"	17	David Lipscomb C/TN	171	25
"	17	Goshen C/IN	145	28
"	17	Hamilton C/NY	67	51
"	17	Haverford C/PA	20	95
"	17	Lawrence U/WI	48	66
"	17	San Francisco, U of/CA	116	35
"	17	Seattle U/WA	160	26
"	17	Wash. & Jeff. C/PA	83	46
97	16	Capital U/OH	100	39
"	16	Cornell C/IA	54	59
"	16	Elizabethtown C/PA	152	27
"	16	Il. Benedictine C/IL	176	24
"	16	Kenyon C/OH	75	48
"	16	Lewis U/IL	210	17
"	16	St. Michael's C/VT	134	29
104	15	Berea C/KY	90	43
"	15	Denison U/OH	75	48
"	15	Iona C/NY	160	26
"	15	Luther C/IA	120	33
"	15	Marist C/NY	210	17

Baccalaureate origins (con't)

104	15	Pacific Lutheran U/WA	193	21
"	15	Pomona C/CA	33	78
"	15	St. Anselm's C/NH	160	26
"	15	St. Norbert C/WI	197	20
"	15	Spring Hill C/AL	80	47
"	15	Westminster C/PA	113	36
115	14	Colgate U/NY	44	68
"	14	Drew U/NJ	83	46
"	14	Gannon C/PA	193	21
"	14	Morehouse C/GA	160	26
"	14	Rose Hulman Tech/IN	201	19
"	14	St. Bonaventure U/NY	125	32
"	14	St. Vincent C/PA	80	47
"	14	Washington C/MD	132	30
NR	13	Barnard C/NY	NR	43
123	13	Centenary C/LA	100	39
"	13	Eastern Nazarene C/MA	171	25
"	13	Linfield C/OR	145	28
"	13	Loyola U/LA	83	46
"	13	Middlebury C/VT	44	68
"	13	Muskingum C/OH	87	45
"	13	St. Mary's U/TX	176	24
130	12	Antioch C/OH	38	72
"	12	Beloit C/WI	62	55
"	12	Birmingham-Southern C/AL	113	36
NR	12	C. of Idaho/ID	NR	33
"	12	Dickinson C/PA	104	38
"	12	Gustavus Adolphus C/MN	152	27
"	12	Hobart & Wm.Smith C/NY	117	34
"	12	Merrimack C/MA	220	16
"	12	Pratt Institute/NY	-	13
NR	12	Santa Clara, U of/CA	NR	25
"	12	Texas Lutheran C/TX	-	15
"	12	Wagner C/NY	145	28
140	11	Benedictine C/KS	176	24
"	11	Berry C/GA	183	23
"	11	Carthage C/WI	117	34
"	11	Colby C/ME	152	27
NR	11	Houghton C/NY	NR	20
"	11	Norwich U/VT	201	19
"	11	Ouachita Baptist U/AR	186	22
"	11	Roosevelt U/IL	128	31
147	10	Amer. Int'l C/MA	208	18
"	10	Augustana C/SD	176	24
"	10	Bridgeport, U of/CT	-	10
"	10	Bridgewater C/VA	186	22
"	10	Creighton U/NE	117	34
"	10	Elmhurst C/IL	201	19
"	10	Emory & Henry C/VA	176	24
"	10	Geneva C/PA	107	37
"	10	Gonzaga U/WA	134	29
NR	10	Grove City C/PA	NR	39

Baccalaureate origins (con't)

"	10	Hastings C/NE	134	29
"	10	Hiram C/OH	75	48
"	10	King C/TN	201	19
"	10	McMurray C/TX	220	16
"	10	Milliken U/IL	98	40
"	10	Monmouth C/NJ	-	11
"	10	Nebraska Wesleyan U/NE	160	26
"	10	Park C/MO	120	33
"	10	Puget Sound, U of/WA	160	26
"	10	Redlands, U of/CA	145	28
147	10	Southwestern at Memphis/TN	152	27
"	10	Wartburg C/IA	186	22
	10	Western Maryland C/MD	197	20
"	10	Wheeling C/WVA	-	12
"	10	Whittier C/CA	125	32
NR	9	Austin College/TX	NR	27
171	9	Centre C of KY/KY	160	26
"	9	Concordia C-Moorhead/MN	193	21
"	9	Hanover C/IN	160	26
"	9	IL Wesleyan U/IL	113	36
"	9	Lake Forest C/IL	-	14
"	9	Loyola Marymount U/CA	201	19
"	9	Mt. Union C/OH	70	50
"	9	Mt. St. Mary's C/MD	210	17
"	9	Mundelein C/IL	-	12
"	9	North Central C/IL	160	26
"	9	Notre Dame C/OH	-	10
"	9	St. Francis C/NY	186	22
"	9	South, U of/TN	128	31
"	9	Stonehill C/MA	-	9
"	9	Wellesley C/MA	171	25
"	9	Whitman C/WA	120	33
"	9	Widener C/PA	-	14
"	9	Wofford C/SC	125	32

Notes on Table

1) NR - Not Ranked. These institutions were omitted in the first edition listing. St. Louis University has been added because they terminated their doctoral program.

2) The institutions on this list are all private colleges that offer principally undergraduate work in chemistry. None offer the doctorate on a regular basis although three colleges have authorization or collaborative arrangements to conduct doctoral work in chemistry. A number of the schools offer master's level work. All institutions are IIA or IIB category as determined by the AAUP.

3) The data for this table was obtained from a list compiled by the Office of Institutional Research of Franklin & Marshall College from data provided by the Board on Human Resources, National Research Council on the baccalaureate origins of Ph.D. degrees granted in the United States each year since 1920.